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THE DIAGNOSIS AND TREATMENT OF TUMORS OF THE SPINAL CORD, INVOLVING THE CONUS AND CAUDA EQUINA.*

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The first tumor of the cauda equina was reported by Lachmann in 1882, when he described a glioma arising from the filum terminale found at postmortem. Sir Victor Horsley successfully removed the first spinal cord tumor in 1887. Lacquer is credited by Schmoll with having removed the first tumor of the cauda equina in 1891, the patient recovering completely. Since then, many tumors in this region have been recognized, and removed surgically. Steinke, in 1918, reported thirty cases of caudal tumor in a series of 330 collected cases of tumor of the spinal cord. From 1910 to April 1, 1923, 112 verified tumors of the spinal cord have been operated on at the Mayo Clinic, and twenty-three (20 per cent) of these involved the cauda equina.

We shall discuss here twelve cases of tumor involving the conus and cauda equina, operated on at the Mayo Clinic since November 1, 1921. These cases are not considered with cases of spinal cord tumors in general, because of the difference in symptoms and surgical management, and the difficulty of exact localization.

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Symptoms and Diagnosis.

The chief symptom is somewhat characteristic pain, usually of long duration. In the twelve cases the shortest duration of symptoms was one year, and the longest, twenty years; the average being six and one-tenth years. The initial symptom is generally root pains, and these were present in all of the twelve cases. The pains usually begin as a lumbago or backache, radiating to the sacrum, hip, and sacro-iliac region, and later, down one or both sciatic nerves, so that quite a large percent of these patients had been treated for sciatica. However, the pain differs from that of sciatica in one important respect; it occurs when the patients are lying down, and they often obtain rest at night by sitting in a chair bending forward, or resting the body on a table, or on the edge of the bed. All of the twelve patients had root pains, which is a higher incidence than with cord tumors at various levels: in only 64 per cent of the eight-five cases previously reported was there a history of root pains.[1] With the pain, if the condition has been present long enough, there will be a slight loss of bladder and rectal control in some cases; in others, weakness in one or both of the lower extremities, and in some, a very marked flacoid paralysis of the lower extremities, with loss of control of the bladder and bowel.

The neurologic findings in this group

of cases are notable for their meagerness except for the conus lesions. In the early cases, and even in certain long-standing ones, there were few positive neurologic findings. In ten of the twelve cases, there was some degree of anesthesia, varying from a slight loss of tactile and pain sensibility around the rectum (Fig. 1), perineum, or posterior surface of the thigh, to marked anesthesia, typical of complete conus and caudal lesions (Fig. 2). in five of the cases, there was slight loss of bladder and bowel control, and in five, slight flaccid paralysis of the lower extremities. The Achilles reflex was reduced or absent in seven; in five, it was normal or exaggerated. The patellar reflex was normal or exaggerated in seven, and reduced or absent in five. There was tenderness over the vertebra at the level of the lesion in seven. Information obtained by lumbar puncture is especially instructive in this type of case. In six of the twelve, there was either a dry tap or xanthochromia, and in nine, a positive None.

The diagnosis in this type of tumors is often difficult, and at times, in the early cases, a definite diagnosis is impossible. Many of the patients have been treated for sciatica for months or years. There are certain outstanding features, however, which always suggest the presence of tumor; pain, often originating as a lumbago, later radiating to the sacrum, and with sciatic distribution, often bilateral, with intervals between attacks, but recurring and growing progressively worse, and particularly the characteristic night pains, or pains exaggerated by the reclining position. If there is also slight anesthesia around the rectum, or slight loss of bladder and bowel control, or definite paralysis, usually first affecting the peroneal group of muscles, the diagnosis is of a cord tumor is justifiable. Slight anesthesia around the rectum and perineum is especially to be looked for, and a careful investigation should be made of a slight loss of sphincter control, as this often appears before muscular paralysis. A lumbar puncture will often determine the diagnosis by revealing a dry tap, although the canal has been entered, or a golden yellow fluid, or a fluid containing a large amount of protein without pleocytosis.

After a positive or probable diagnosis of tumor has been made, the level of the tumor must be considered. The method of differentiation of caudal and of conus lesions, as outlined by Muller, is not usually of much practical value in determining the exact level of the tumor, as the findings do not correspond to a complete lesion at any level. Early in these cases, when operation should be performed, it is often impossible to determine the exact level of a tumor, except to decide that it is either at the conus, or involves the cauda equina lower down. For this reason it is usually necessary first to explore the region of the conus, and then to continue downward until the tumor is located.

There are several conditions from which tumors involving the cauda equina must be distinguished. Sciatica, which is most often confused with these tumors, is notable for the absence of positive neurologic findings, although the Achilles reflex is absent or reduced in 50 per cent of the cases. The history is usually short, not progressive, with an acute onset and gradual improvement; the spinal fluid is negative, and there is no anesthesia or motor paralysis. Early in cases of spinal cord tumors, it is not always possible to differentiate sciatica and tumors involving the conus and cauda equina. Pelvic tumors, especially anterior sacral tumors, or Middledorph tumors, are particularly likely to be taken for caudal tumors. In the last three years we have performed exploratory laminectomy in two cases for supposed tumors of the cauda equina, and later learned that the symptoms were due to anterior sacral tumors. The symptoms are often identical to those of caudal tumor, and unless the tumor can be palpated by rectum or vagina, a differential diagnosis is extremely difficult. Tumors and inflammations of the vertebra may produce the same symptoms as those of the cauda equina; they can usually be distinguished by palpation and the roentgen-ray findings. Myelodysplasia, first described by Fuchs, may present difficulties in differentiation, but if the outstanding features of this condition, as outlined by Spiller, are kept in mind, it can be recognized. These features are

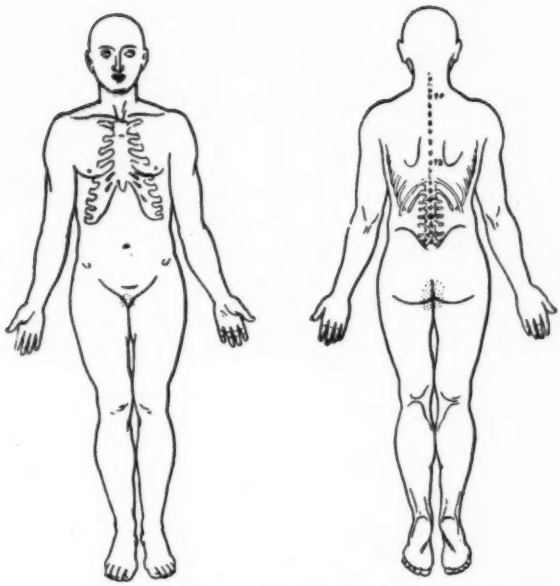

Fig. 1.—Slight loss of tactile and pain sense about the rectum. Tumor was an ependymal cell glioma arising from the filum terminale situated at the level of the third lumbar vertebra.

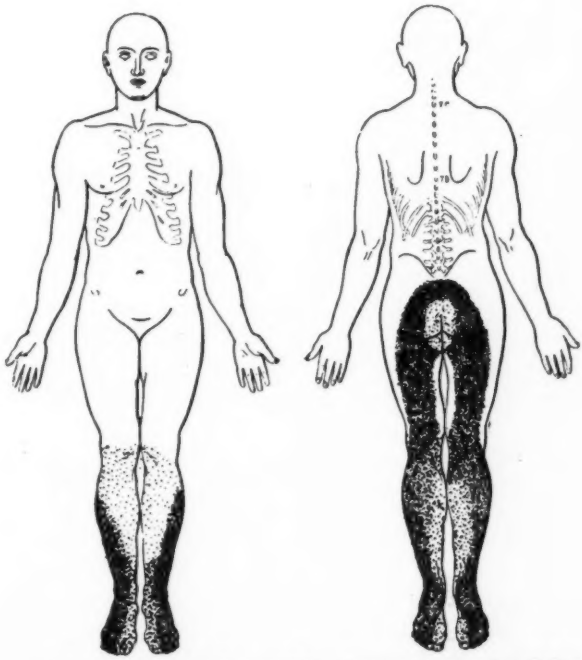

Fig. 2.—Anesthesia resulting from a tumor involving the conus.

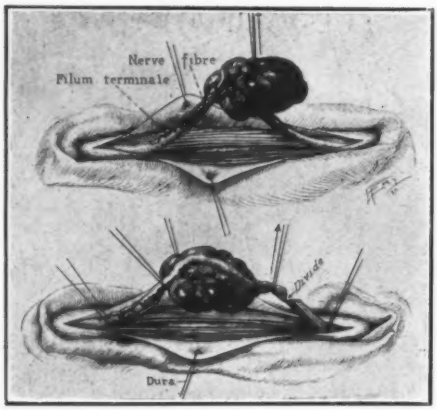

Fig. 3.—Neurofibroma at the level of the second lumbar vertebra.

Fig. 4.—Large ependymal cell glioma arising from filum terminale just below the conus, with an arachnoid cyst above.

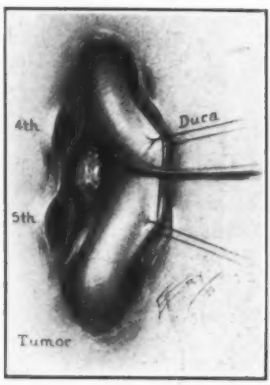

Fig. 5. — Fibrochondroma of intravertebral disc between the fourth and fifth lumbar vertebrae.

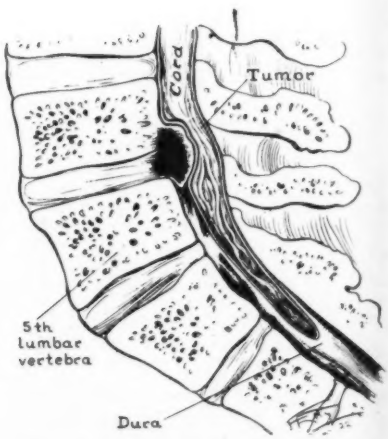

Fig. 6.—Same as Figure 4. Schematic section showing relation of tumor.

weakness of the sphincters and nocturnal enuresis persisting after puberty, syndactylism between the second and third toes, disturbances of sensation, chiefly of temperature sense, not strictly radicular in type, and more especially on the toes than on the foot, defect of sacral canal as shown by x-ray, abnormaities in the reflexes, defects in domen and lower extremities, defects in the feet, and other anamolies, such as hypertrichosis of the sacral region, lipoma in the coccygeal region, fovea coccygea, and so forth. Tabes dorsalis involving the cauda equina must also be considered, but this can be excluded by other signs of syphilis of the central nervous system.

Pathology.

Tumors found in this region of the spinal canal originate from the same tissues as they do higher up in the cord, and may be endothelioma, neurofibroma, glioma, and so forth. Of the twelve cases reported, five were neurofibromas (Fig. 3); two were apendymal cell gliomas, originating from the filum terminale (Fig. 4); two were fibrochondromas, originating from the intervertebral discs between the fourth and fifth lumber, and fifth lumbar and first sacral vertebrae, respectively (Figs. 5 and 6); one was an endothelioma; one, a cyst, probably resulting from a degenerating glioma of the filum terminale, and in one case there was an intramedullary tumor of the conus; a specimen was not removed for diagnosis.

Surgical Results.

Tumors were removed in eleven of the twelve cases. While sufficient time has not elapsed to learn the final results in certain cases, the living patients have all been traced, and the results, so far as can now be determined, may be summarized as follows: One patient had an inoperable intramedullary glioma of the conus, and is helpless; one, who had a neurofibroma at the level of the second lumbar vertebra, which was removed, died from shock thirty-six hours after the operation; three had slight paralysis, but these are all improving, and seven are cured and are following their usual occupations.

The mortality rate in cases of this type has always been considered high. It was 46 per cent in thirty cases of caudal tumor collected by Steinke. In a series of sixty-seven cases of cord tumors, reported by Elsberg, in which operation was performed, eleven were of the conus and cauda; two of the eleven patients died following operation. In our series, the mortality rate is 9 per cent. We believe that three factors have contributed to lower our mortality rate: (1) earlier recognition of the condition, and hence earlier operation; (2) perivertebral anesthesia, which reduces bleeding and shock, and (3) dividing the operation into two stages in certain cases in which prolonged and extensive operation was necessary.

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DISCUSSION.

Dr. C. S. Holbrook (New Orleans): I am sorry Doctor Parham is not here to discuss this paper, because he operated for us a low-grade tumor a year or so ago. The symptoms were very much those that have been described, although the location was not quite an equina tumor. The pain had been present for six or eight months and various diagnoses had been made. Finally the surgeon suspected the true condition and referred it to Doctor Van Wart for localization. The tumor was anucleated and the man made an excellent recovery as far as the operation was concerned, and now drives an automobile.

Since then I have seen a lower tumor, down around the second dorsal. This case had unfortunately been diagnosed sciatica for nine or ten months. The diagnosis was not at all tentative because there was marked paralysis, marked anaesthesia. Operation by Doctor Allen revealed a ——— cyst. Puncturing the cyst the fluid escaped with quite a gush, and after a tedious convalescence the patient is free from pain, except that, due to destruction of the cord, there is a certain amount of anaesthesia which will not be overcome. The patient is able to be about on crutches. The most striking thing was the length of time that he had gone along with a diagnosis of sciatica when examination showed that this should have been ruled out many months earlier.

I think we all feel very grateful for having Doctor Ott here, and to realize that in his early days he spent considerable time in New Orleans. He was interne in the Charity Hospital and from there went to the Mayo Clinic, where he has been for seven years. It has been a great pleasure to hear his excellent paper.

Dr. L. L. Cazenavette (New Orleans): The subject presented by Doctor Ott is one that naturally interests those of us who are doing neurological work. I believe that one point should be stressed, merely to emphasize again the point brought out by Doctor Ott, and a point that will be appreciated by most of us here. The most difficult point in these cases naturally is to make the diagnosis of the tumor cauda equina, and the first symptom that usually presents itself, as Doctor Ott has brought out, is the existence of pain. I feel that many of these cases that might be passed upon as sciatica or lumbro-sacro neuralgia leave our hands when possibly by further observation we might find more cases of tumor affecting that part of the nervous system than we would otherwise. In other words, I feel that if a case has persistent pain, especially of that character known as sciatica, they should have something else done besides having the teeth and gall bladder removed. I feel these cases should go to those who really do neurological examinations to determine the existence of any other symptoms that would be found in an affection of the lower part of the spinal cord or the cauda equina.

Dr. W. O. Ott (closing): I have nothing further to add, but I would like to stress the importance of doing lumbar puncture in any case where you feel the pain might possibly come from a cord tumor, because in a considerable number of cases, especially in those that are early, operation should be done at once if you are going to get results. If you wait until the leg is paralyzed you increase your risk. If you do a lumbar puncture it will in many cases determine the diagnosis. If you get a dry tap the experienced man will go higher and go lower. If the tumor is blocking the fluid, the fluid that comes from below will be yellow. That will determine your diagnosis.

RENAL LESIONS DUE TO URETERAL OBSTRUCTIONS OTHER THAN CALCULUS.*

By H. W. E. WALTHER, M. D., A. C. S.
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Obstructions in the ureter, with the resultant renal lesions they produce, furnish one of the most interesting chapters in urology. These impediments are either congenital or acquired and are dependent on intrinsic or extrinsic influences. Of the many factors, other than stone, that one must consider as retarding the free flow of urine from the kidney pelvis to the bladder, kink in a ureter (due to renal mobility, supernumerary blood-vessels, etc.), stricture, blood-clot, tumor, pressure from without (as in the case of the pregnant uterus), these are all factors commonly met with that produce obstruction.

Ureteral retention is, at times, found in so slight a degree as to cause but little urinary stasis. In some instances it is of an intermittent variety (as with the wandering kidney). And yet though slight and of intermittent character the condition may produce congestion of the kidney to such a degree as to occasion an infection from the circulating bacteria that might otherwise do no harm. For it is by a "congestive reaction" to back pressure in the urinary tract that retention (or stasis) ultimately damages kidneys.

For too long a time it has been the custom to group cases of this type purely from the standpoint of end-pathology resulting after years of progression of the lesion in question. Crabtree, in a recent contribution, dealing with the nature and significance of renal stasis, attempts, after painstaking clinical investigation, to classify these cases physiologically. His postu-

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lates can only be briefly reviewed here. He speaks of: (I) acute stasis—which is met with in accidental ligation of a ureter, plugging of the ureter and renal pelvis by blood-clot, swelling of the ureteral mucosa (particularly at the uretero-pelvic juncture); (II) subacute stasis—of weeks' or months' duration, the outstanding class of cases in this group being the back pressure kidney associated with pregnancy; (III) intermittent stasis—the floating kidney group—where aberrant vessels and adhesive bands may influence the degree of pelvic stasis produced by renal mobility; and, (IV) relative obstruction—where one encounters pelvic dilatation without any apparent ureteral obstruction—usually this type is classed as congenital. Crabtree contrasts stasis against hydronephrosis and believes that the future will demonstrate that it is possible to recognize the "condition" without waiting for the "result."

Hill considers obstruction of the ureter the most frequent predisposing cause of the localization of bacteria in the pelvis of the kidney. He studied a series of cases in which appendectomy was to be done. The urines of 34 per cent of cases which were sterile before the appendix was removed produced cultures of B. coli within a few days after operation. Repeated cultures as controls on nonoperated cases produced no positive cultures. Stasis in some form was demonstrable in every instance where infection occurred.

Hunner contends that ureteral stricture is an important etiologic factor in the production of so-called essential hematuria. This matter deserves careful study. If there be any logic to this new theory as regards the causation of renal hemorrhage of unrecognizable origin, it behooves us to more assiduously investigate these cases in the future. Having had recently an unexplainable death following nephrectomy for intractable bleeding, and receiving later an autopsy report describing a marked ureteral stricture with ureteral dilatation above on the affected side, I am of an open mind on this most puzzling condition.

Although it may frequently be impossible to draw fixed lines between the various renal lesions (for one condition may blend into another almost imperceptibly) yet obstruction in some form is unquestionably the main causative factor in the production of most infections of the kidney. Repeated animal experimentation has shown decisively the bearing of obstruction to these pathologic states. Pyelonephritis, pyonephrosis and hydronephrosis have commonly this factor as a basis of being. And stasis may play a part in producing, or at least intensifying, perinephritic lesions.

All these conditions have, more or less, a common symptomatology. Frequency of urination and burning during the act—with or without an increase in the normal output of urine; fever—either of a continuous or intermittent type, with or without rigors; palpable kidney—which may elicit tenderness on deep pressure and is not infrequently above normal size; and, leucocytosis—of twenty thousand or over, depending on acuteness or chronicity of case as well as type of lesion existent. With many patients, particularly those with long-standing conditions, concurrent symptoms noted are evaluated accordingly. Hypochrondria; loss of appetite, with loss of weight; indigestion, nausea, vomiting, intestinal upset; headaches; —these are but some of the symptoms complained of.

The most interesting phase of the subject is that dealing with the means by which a correct diagnosis can be made. The methods employed must fulfill two main prerequisites namely: (I) they must be non-injurious to the patient as well as to the pathological condition he is supposed to harbor; and (II) they must be so conclusive in results obtained as to leave little room for doubt.

This brings one almost abruptly to cystoscopy. I say abruptly because I consider it unnecessary to unduly accentuate the value which obviously must be placed at all times on a carefully compiled case-history, a painstaking physical examination which leaves nothing to the imagination, and a most careful urinalysis (not ignoring the importance of collecting the urine in a proper manner).

The indispensableness of the cystoscope and the ureteral catheter in diagnosing diseases of the kidney is established. It only remains to enumerate

briefly just what aid these instruments are to us here. No observer contends that ureteric meatoscopy, in itself, reveals obstructions higher up. Studying the ostia for the character of efflux might sometimes be of value, particularly after an intravenous injection of indigocarmine. Yet the only possible picture that might be associated with ureteral obstruction would be prolapse of the ureter—and even such an assumption might rightly be challenged. The ureteral catheter is truly our most faithful ally. Not only are obstructions in the ureter recognized by the attempted upward excursion of the catherer, but should there be found urinary stasis in either ureter or kidney pelvis, this instrument, serving as intermediary to dilated pocket and aspirating syringe, will give us the content of such a cavity. Where wax bulbs or acorn-tipped bougies are passed, ureteral strictures can be detected.

Urography, the term now used for outlining the urinary tract on the x-ray film, has been of the greatest value in demonstrating graphically the various types of renal lesions under discussion. Braasch, in 1915, published a monograph on this phase containing 296 pyelograms made of eighteen different pathological lesions in the kidney and ureter. The majority of his illustrations deal with conditions primarily due to obstructive factors. Much has been written relative to the dangers accompanying pyelography. After a wide experience in the technique, beginning in 1912, at which time I made the first pyelogram attempted at Charity Hospital, I have followed the work through a large array of opaque media advocated, until today we have, in sodium iodide a non-irritating substance which makes a clear solution and casts a denser shadow than the old silver suspensions formerly used.

I find myself at complete variance with some urologists who claim that they can determine, by mere injection of the renal pelvis with methylene blue solution and then noting its regurgitation around the catheter into the bladder, the degree of renal stasis. It is commonly observed that any muscular cavity contracts the moment it is emptied. Only where atony exists will this phenomena be absent. Furthermore, a catheter in the pelvis cannot possibly determine the amount of ureteral stasis lower down.

This brings us to the method of making pyelograms. If one will make a series of pictures by first plugging the lower end of the ureter with a Garceau catheter and then inject some 25 per cent sodium iodide solution into the ureter and kidney pelvis he will detect many interesting kinks, and in some instances strictures, which will be entirely missed where the catheter has first been introduced up to the kidney. Not infrequently the unusual excursion of the ureter, influenced by kinks, areas of dilatation, stricture narrowing, as well as the various positions a sagging kidney might assume, furnish interesting problems. We see, time and again, pyelograms which clearly demonstrate dilatation of the ureter or renal pelvis, but which do not tell us the cause of such a state of affairs. Legueu, in 1904, drew attention to abnormally placed blood-vessels, serving to compress the ureter, frequently caused pelvic dilatation. By dividing such vessels he cured his patients. Elkhorn, in 1907, further emphasized this condition, and W. J. Mayo has frequently alluded to it in his writings upon the kidney. High insertion of a ureter into a pelvis or its oblique entry may be a factor in producing obstruction. Howard A. Kelly has drawn attention to some rare conditions met with as tumor pressure from a cyst in the sinus renalis as well as an echinococcus cyst of the lower pole of the kidney. Surely the cystoscopist's lot is not one continuous bed of roses in arriving at definite conclusions in cases of this nature.

Reverting back to cystoscopy just for a moment, it is perfectly clear that in cases of this kind a comparative study of the two kidneys for pelvic content, separate urinalysis, and differential functional reading with 'phthalein or indigocarmine are all routinely employed. Such study of comparison not only furnishes means of accurate diagnosis, but often determines whether or no the case might be considered a good operative risk.

As regards the treatment, each lesion will require its individual care. Collectively one can consider the hygienic

rest (in the acute stage), keeping bowels regulated, increasing intake of fluids (water externally, internally and eternally!), application of cold for fever, urinary antiseptics by mouth, sedatives for pain, and the local treatment (with the cystoscope, etc.).

Pyelonephritis, due to an obstruction, can be much benefitted and not infrequently cured by the combined, repeated dilatations to the ureter and lavages of the renal pelvis. The Garceau catheter and the Walther flexible metallic ureteral sound are the instruments most used for dilating the ureter. For lavage silver nitrate has no equal, being employed in from 1-4 to 2 per cent solutions. One per cent mercurochrome as alternate for the silver at times gives good results.

Where stasis accompanies the renal lesion prolonged drainage by means of the in-dwelling ureteral catheter gives uniformly good results. I speak here of conditions amenable to such therapy, realizing full well that many pyonephroses and hydronephroses are little influenced by the procedure. Then, too, the patient has to be considered. Some tolerate retention catheters well while others do not. I have kept catheters in kidneys as long as seven days, with excellent drainage all the while, with a fall in temperature to normal, with dropping of a 30 to 40 thousand white cell count to normal, with urine that changed from a consistency of cream to that exhibiting but a faint haze to the eye, and with general subjective improvement of patient. I must admit that such improvement does not always continue upon removal of the catheter, but even if only a fair number are relieved by this conservative plan, saving them the ordeal of a major surgical procedure, the reward is ample.

Many cases of pyonephrosis and hydronephrosis met with will require surgery. If, as has been pointed out, some remedial factor as an aberrant blood-vessel or band, a sagging kidney, a ureteral stricture, or some extrinsic agent exerting pressure can be relieved, then the kidney itself can be spared. Certain physical exercises, aimed at developing certain muscles, when combined with appropriate supportive mechanical appliances in the form of belts or corsets, give many patients complete relief of all symptoms.

It is true that some of these conditions will only be brought to light at operation and it is only after the parts affected are exposed to inspection that matters can be definitely decided. Whether simply to drain, or to remove, or to attempt to fix the kidney presents another problem. Many experience disappointment in having a case do badly following an uneventful hospital convalescence and later find it necessary to go back and remove the kidney. The nicety in judgment displayed by the operator under such conditions is surely the most rigid test to which he can be subjected. I wish to make a plea here for conservatism in kidney surgery. Too many kidneys are being sacrificed needlessly. Unless expediency demands it, rest content with a nephrotomy. Reserving nephrectomy for the second-stage operation in instances where simple drainage fails.

The status of internal urinary antiseptics in urology remains indeterminate. Urotropin has had wide vogue with the profession. The fact that urotropin requires a urine strongly acid in reaction, in order that it split into formalin and ammonia, makes it ever of doubtful value. For it is most difficult to render, and maintain, the urine strongly acid. Neutral acriflavine, on the other hand, acts best in an alkaline media. It is easy to alkalize the urine. This new dye-antiseptic is still in the experimental stage. But the results so far reported with its use are encouraging.

PRE-ECLAMPTIC TOXEMIA.*

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Pre-eclamptic toxemia occurs several times in every 100 pregnancies, generally in the last two to two and one-half months, and oftener in primiparae than in multiparae. Various classifications of this syndrome of toxemia, albuminuria, and hypertension are given by the authorities; e. g., Williams differentiates between the nephritic and the pre-eclamptic types; DeLee does the

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same, but also stresses the "kidney of pregnancy," which is simply an early stage of pre-eclamptic toxemia. It is true that cases of chronic nephritis aggravated by pregnancy and encountered usually in elderly multiparae; in these patients the progress of the disease is slow, and convulsions, though at times a complication, do not occur as frequently as in the true toxemia of pregnancy. These cases are in the minority, so it is well, from a practical point of view, to consider every obstetrical patient with albuminuria and hypertension as a potential eclamptic, even though toxic symptoms may not have as yet developed.

The symptoms are well known, though their gravity is not always appreciated. Edema is common, and is especially important if it involves the hands and face; swelling of the lower extremities is often not of toxic origin, but the patient should be warned to report it as soon as it is noted. Epigastric pain, with or without nausea and vomiting, is an important danger signal. Headache is very significant. Dizziness, disturbances of vision (even total blindness), somnolence, an ill-defined feeling of malaise, and a lessened output of urine, are often noted. The most important symptoms are headache, epigastric pain, visual disturbances, and edema.

By carefully watching our patients, however, we will often detect albuminuria or hypertension before the patient complains of any symptoms, and this was our experience in many of our cases It may be several days before the woman feels ill; in one of our patients, the systolic blood pressure rose from 168 to 220 in six hours, and she felt perfectly well throughout. The blood pressure is especially important, and will often begin to rise days in advance of the development of albuminuria. Any rise above the normal of the particular patient under observation is suspicious; thus, if the normal is 110 to 120, 130 to 140 is alarming, 150 is dangerous, and the danger increases as the pressure rises. As regards albumen, its presence is of more importance than the amount; it is not well to disregard even a trace, especially when it is associated with hypertension. As in the case of the blood pressure, a rapid rise in the course of a few hours is often noted. Hence we feel that these two points should be carefully watched in every pregnancy, and that observations should be made weekly after the seventh month, instead of bi-monthly, as is the time-honored teaching.

It may be well to note that we occasionally see patients with a borderline condition; that is, a systolic pressure 20 to 40 points above normal, with or without edema, but with no albumen and no toxic symptoms. We class them as probably toxic, and watch them very closely, regulating their diets and habits carefully.

The treatment consists of rest in bed, starvation, and elimination. Many of these patients have been guilty of overfeeding, and they are often constipated. A mild pre-eclamptic state is often transformed into a serious condition by a hearty meal, just as an attack of true eclampsia in a pre-eclamptic is at times precipitated. So for 24 to 36 hours we give plenty of water by mouth, and nothing else. A brisk saline cathartic, occasionally preceded by calomel, is administered. If nauseated or very toxic, the stomach is washed, and a quart or so of water is given through the tube. The colon is flushed every eight hours with five gallons of a 2 1-2% solution of sodium bicarbonate, turning the patient on her side and using a rectal tube. She is kept warm, to promote the activity of the skin. Alkaline diuretic drinks may be administered, but their value is questionable. If the blood pressure persists at 175 or over, venesection and the removal of 400 to 500 c.c. of blood is advisable, especially if the patient complains of toxic symptoms. But if she is in labor or labor is to be induced, it is well to omit this bleeding, as the additional loss of blood during delivery may shock the patient; furthermore, improvement is the rule after delivery. The output of urine is carefully noted, as is the amount of albumen, and the diastatic activity of the urine is determined. This latter is thought to be of value in differentiating between pre-eclamptic and nephritic toxemia. The blood pressure is taken two or three times daily, and the non-protein nitrogen, urea, uric acid and creatinin of the blood are estimated. These determinations have not

thus far been of material assistance to us, except that the findings are further evidence of nitrogenous retention, and thus aid in the diagnosis of toxemia.

If the patient is within four or five weeks of term, with the fundus 30 or more cm. from the symphysis, and the baby is alive, we do not feel justified in temporizing more than three or four days, unless the patient shows marked improvement. The baby shares in the toxemia, and often dies in utero, or soon after birth, especially if the maternal toxemia has extended over a considerable period. We have found that a healthy child at eight months has a better chance than a weak and toxic one at eight and one-half months. The nearer term, the more readily we interfere, especially as we know that a small percentage of albumen and a moderately high blood pressure do not necessarily imply a mild toxemia. One of our two fatal cases had 6 to 8 per cent of moist albumen and a systolic pressure of 150 to 160 until she developed fatal eclampsia. If the pressure is 170 or over, we temporize only in case the child is not viable, but we do this with fear and trembling, and if prompt improvement does not occur, labor is induced. Here again the intro-uterine fetal death rate is high, and if we wait a little too long and eclampsia supervenes, the baby will be lost and the mother's chances will be materially lessened. Finally, if the systolic pressure is 200 or over, we induce labor at once, irrespective of the period of pregnancy, except in the very occasional case of clear cut chronic nephritis with abundant urinary output and no toxic symptoms.

In case labor is induced, we try first the following method; Castor oil, one ounce; in one hour, a hot enema; one hour later, 10 grains of quinine hydrochloride, which is repeated every hour for three doses. This acts in many cases, especially if near term. If this treatment fails, or is slow in its action, we add pituitrin, m iii or iv, every hour for four doses, unless active labor supervenes. Occasionally, near term, pituitrin alone will suffice. Should these measures fail, the choice lies between pack, catheter, and bag, and of these we prefer the bag. The pack conduces to infection and the catheter method has proved very slow and at times has failed entirely. We use the largest Voorhies bag that can be inserted, usually a No. 4, generally giving ether or gas in primiparae, while in multiparae an anesthetic is as a rule not required. Pituitrin is often administered in small doses in addition; labor usually begins in two to eight hours, and the uterus is often emptied in from six to twelve hours after the insertion of the bag. We have treated 24 cases along these lines in the past two years. Labor was induced 21 times, using the bag in 19 of these patients, and the catheter twice. Three patients were not treated by induction, as their toxemias were not serious, and they delivered normally. Two mothers developed eclampsia and died; one of these, as stated above, had 6 to 8 per cent of moist albumen, 150 to 160 pressure, and did not complain of toxic symptoms until just before the eclamptic attack developed. She was near term, and might have been saved had labor been induced a few days earlier. In the other patient, the toxemia was of short duration, and eclampsia developed after the insertion of catheters. Eight babies were lost; five of them were premature, weighing three to four pounds, while the others shared in the maternal toxemia. The morbidity rate was low, in spite of the fact that the use of the bag is stated to be followed by fever frequently. In this series, the majority had no fever; in four cases there was transient temperature of 101° or over; only one patient had 102°, and in her case it was hard to establish good uterine contractions (two bags were used and the labor lasted 48 hours).

In conclusion, we wish to stress the importance of prenatal care, especially emphasizing regular and frequent blood pressure observations in addition to the examination of the urine. We wish also to drive home the fact that pre-eclamptic toxemia is always serious, no matter whether the signs and symptoms are mild or marked, for *any* patient thus afflicted may at *any* time develop eclampsia. The best interests of both patients will usually be best served by emptying the uterus, unless the toxemia is very mild and improvement under treatment is marked.

DISCUSSION.

Dr. J. S. Hebert: I think that, after all, we practice medicine to get results. I think the close study of pre-natal work is going to do away with pre-eclamptic toxemia. The only way we are going to prevent it is by making these close studies. It is hard to determine the best procedure at times, but some things are important. I have followed this rule in the last 10 years: the presence of albumin is always of significance, the quantity also, but, in conjunction with the presence and quantity of albumin we should watch the elimination of urea; we should combine the two. I know we should eliminate from 15 to 25 grams of urea per 24 hours. I think when we have a patient we should watch her closely, for when the total urea comes down to 10 or even lower, my percentage of albumin goes down to 2 or 3 grams per liter and blood pressure 280 to 300 I feel I have a very sick woman. If a patient presents this picture I think it is time to act—remember: quantity of albumin from 2 to 5 per cent—about 2 to 5 grams of albumin per liter—and percentage of urea down to 10 grams per 24 hours; this is the rule I have followed.

DUODENAL DILATATION.

Its Significance From Medical, Surgical and Radiological Standpoints. A Preliminary Report.

By A. LEVIN, M. D.
New Orleans, La.

Duodenal dilatation, in its various forms, according to some observers, is rare enough to merit our attention. Textbooks, for some reason, have failed to lay sufficient stress on this important phenomenon of abdominal pathology. When large quantities of duodenal biliary fluid are encountered in the stomach, we are prone to designate it as gastric dilatation. It is my belief that in a number of such cases, a largely dilated duodenum, the so-called giant duodenum, forms the background of such a condition, as will be demonstrated in the course of consideration of this subject. We often find duodenal biliary contents in the stomach. In rare instances, enormous quantities are regurgitated, forming a stagnant pool of fermented fluid in the stomach, harboring products of decomposition. The consequence, naturally, is a profound toxemia giving rise to symptoms which often mislead the radiologist, physician and surgeon. The condition is serious and requires a great deal of consideration as to what steps to undertake.

Reviewing briefly the literature on the subject, we find the following statements, thus:

W. J. Tucker states that chronic dilatation of the duodenum is met with, not infrequently, in the course of surgical operations, but a true giant duodenum is a very rare clinical and surgical entity. The condition itself is interesting as it offers a program both for clinical diagnosis and therapeutics. Very little relief is offered by medical or surgical procedures. The condition may be nervous or reflex in origin as suggested by the finding of this condition in patients suffering from appendix and gall bladder syndroms. A fair percentage of cases were found to be due to constriction or kinking at the duodeno-jejunal angle, and by reason of peritoneal bands.

In some cases, no cause was found.

Lane believes it is due to ptosis of the entire intestinal tract, with accumulation of fecal matter in the cecum and ileum, resulting in a pull on the duodeno-jejunal angle and a consequent dilatation of the duodenum.

Christian contends that the condition is due to gastric atony and pyloric relaxation.

Ochsner thinks that it is due to a constriction of a sphincter muscle, which he states exists aboral to the common duct papilla.

Barber, in the annals of surgery, 1915, offers an interesting theory founded on animal experimentation. He found that incomplete obstruction of the terminal ileum gave rise to a dilated duodenum, while a complete obstruction caused no change or increased tonicity of the duodenum.

H. Shoemaker, in an article on chronic dilatation of the duodenum speaks of its causes as follows:

Dilatation of the duodenum must occur when an obstruction distal to that part of the gastrointestinal canal exists. It naturally occurs as a sequence to dilatation of the entire length of the small intestine. It is caused by congenital malformations, after an attack of infantile paralysis of the intestinal type, by obstructions due to dragging of the viscera sharply at the duodeno-jejunal

*Read before the Orleans Parish Medical Society, June 25, 1923.

angle and sometimes by an anomaly of the superior mesenteric artery.

H. Barclay presents his views on the subject as follows:

Chronic dilatation of the duodenum may be classified under two subdivisions:

1.—Those due to organic stenosis (a) in the duodenal wall as ulcer, (b) about the duodenum as adhesions, tumors, etc.

2.—Mechanical occlusion of the duodenum produced by traction on the root of the mesentery or constriction of congenital bands and adhesions.

Causes.

Some of the causes in the order of frequency are:

1—Ptosis of the transverse colon, particularly of the hepatic flexure with or without gastric ptosis.

2—A small intestine provided with only a short mesentery.

3—A jejunum which is dropped perpendicularly.

4—An old duodenal ulcer which has become attached to the gall bladder or liver, producing a sharp kink.

5—Bands in the upper abdomen, embryological or acquired.

Bloodgood classifies these cases as:

1—Dilatation associated with acute dilatation of the stomach, gastromesenteric ileus, as a postoperative complication, typhoid, pneumonia, rheumatism.

2—Chronic dilatation with a destended cecum, short mesentery of ileum pulls on the mesentery at the duodenojejunal angle causing a kinking and dilatation of the duodenum.

3—Dilatation of duodenum after gastro-enterostomy due to duodenum being closed at both ends.

Practically all authors agree that the condition is rarely, if ever, congenital—that it is post-natal and mechanical in its origin.

Reviewing the causes enumerated by the above observers, there is no mention made that fecaliths or enteroliths in the colon without any intervening pathology between it and the duodenum, can cause a marked dilatation of the duodenum. In the cases which I am to report here tonight, the factors of the duodenal dilatation evidently were fecaliths and enteroliths in the cecum and colon.

Pathology.

In the milder forms no demonstrable changes in the intestinal wall or in adjacent structures were found, and in 15 of the 26 cases at the Clinic of Dr. Tucker, no causes were found in the gall bladder and appendix, and patients were not relieved by operation.

In giant duodenum, however, definite pathology is found in the intestinal wall; extreme atrophy of the muscle structures with changes in the mucosa and glands. As a result of this gastric atony may develop and the acidity may be entirely lost.

Laboratory Methods As Diagnostic Aids.

In the milder forms, the gastric analysis reveals nothing characteristic, except a slight subacidity, if a slight amount of the bile is present in the gastric contents. In the severer forms, we may have a total achylia. The most characteristic finding, however, in the true giant duodenum, is the large accumulation of duodeno-biliary contents in the stomach. If the accumulation is of short duration, the color of the fluid is distinctly yellow, or yellowish-gray with a heavy sediment. If, however, the fluid has been stagnating in the stomach for a longer period, and has become oxidized, the color is dark green with a heavy accumulation of mucus and sediment.

The X-ray findings in these cases are very characteristic and diagnostic. H. M. Imboden gives the following X-ray findings in Dilatation of the Duodenum:

1—Reverse peristalsis.

2—Writhing and twisting of the duodenum due to its attempt to empty itself.

3—Accumulation of contents in the lowest part.

4—Dilatation.

5—Tenderness over the angle of Trietz.

The examination must be made fluoroscopically and not by plates. Peristaltic waves are frequently observed from right to left.

Symptomatology.

A definite symptomatology has been worked out following observation on cases reported in literature. It is mostly

gastric, although the early stage of hypertonicity of the stomach due to failure of the duodenum to pass along the bolus of food, will produce all the classical symptoms of duodenal ulcer, particularly the pain at the end of digestion and excessive acidity. Later on, an atony of the stomach follows, and the acidity may be entirely lost. Vomiting is an associated symptom of the later stage of dilatation of the upper portion of the gastrointestinal tract; it is large in amount and recurring; food eaten from one to three days before is regurgitated; there is marked abdominal distension and gas. In the more chronic types there is a distinct icteroid tinge to the skin and conjunctiva, toxic headaches are associated with it, marked constipation, loss of appetite, a general relaxation, slight temperature and pulse between 90 and 100, with a general picture of chronic biliary toxemia. The urine may contain very heavy Indican. Superficially observation of a patient of this type, lead us to make a quick diagnosis of chronic gall bladder disease.

PROGNOSIS

Very little can be promised. Four of the eight patients seen by Tucker were relieved by operations and three died after operation. Gastro enterostomy was done in six, with occlusion of the pylorus in two cases. Duodenojejunostomy was done in one case on record at the clinic. In the more exaggerated forms, a direct operation on the duodenum itself, short-circuiting, is necessary before any relief can be expected. A prominent surgeon of New Orleans expressed his personal experience with such cases from a prognostic standpoint as follows: "Most of my operated cases died shortly after operations, probably due to profound intestinal toxemia. These patients lack resisting power and vitality to withstand operative shock."

In the two cases which recently came under my observation, the causative factors were fecaliths and enteroliths in the large bowel. One was operated when the diagnosis of duodenojejunal obstruction was made and confirmed by X-ray findings of a giant duodenum, with fatal results, death following six hours after operation. There were absolutely no adhesions or bands anywhere. The small intestines were perfectly normal in appearance and size, except for a giant duodenum, but the entire large bowel was filled with fecaliths. I cannot explain on a real scientific basis, how duodenal dilatation developed as a result of fecaliths, unless it caused a drag and pull on the duodenojejunal angle.

If the radiologist had completed the X-ray pictures of the entire gastrointestinal tract, and could have demonstrated the existence of fecaliths in the colon, medical measures to rid the colon of the offending obstacles would probably have saved the patient's life, as was demonstrated in the second case.

The histories of the cases are as follows:

CASE I.

Mrs. M. L., age 60 (white) Teacher by occupation.—

In December, 1922 she began to complain of vomiting green fluid and of a dryness of tongue and mouth. No pain after meals, but heaviness, fullness and bloatedness. She also suffered from waterbrash; constant nausea. At first vomiting was off and on, loss of appetite, and constipation, later on a persistent vomiting set in with abdominal cramps. She began to lose in weight rapidly and the color of the conjunctiva and skin became distinctly icteroid. Involvement of the nervous system was manifested by a very marked general depression. Physical examination of the abdomen presented the only interesting feature; that is, a marked abdominal tympany over the left and lower abdomen, with a flat sound over the right upper abdomen, and much distension.

I introduced the stomach tube and obtained over a half gallon of dark green stagnant material of a very foul odor. I put her on a full diet for another 24 hours with the idea of determining whether there would again be a marked duodenal regurgitation. The following day I introduced the tube and found a similar quantity of fluid with a heavy residue. The color of the fluid obtained this time was not as dark green as the first, but rather a light yellow. The examination revealed that it was duodenal contents.

I diagnosed the case as one of obstruction at the duodenojejunal junction, and

advised an X-ray to corroborate my diagnosis. The X-ray showed a giant duodenum. We did not look further and were satisfied that our diagnosis of duodenojejunal obstruction was correct and operation was advised. The surgeon agreed with me in my opinion and also suggested surgical interference for relief of the above condition.

On the operating table, to our surprise, a very unusual condition was found. There was absolutely no obstruction at the duodenojejunal junction. The duodenum was markedly dilated. The intestines lower down were normal, but the entire large bowel from one end to the other was filled with hard fecal concretions. The surgeon could do nothing. The abdomen was closed, and shortly after the operation the patient began to sink very rapidly, and in spite of our efforts, died 6 hours later.

CASE II.

In this case, no diagnosis of duodenal dilatation was made, but intestinal obstruction was suspected and surgical interference was contemplated. It is my firm belief, judging from the quantity and character of fluid found in the stomach, that we were dealing with a giant duodenum caused by a true enterolith which is composed of cholesterin, obstructing the ileo-cecal region. The size of the enterolith is too large to entertain a possibility of a common duct dilatation and the passage of that stone from the gall bladder. It is rather possible that a small gall stone passed the common duct and the stone was enlarged by cholesterin crystals from the intestinal tract. It is also possible that a rupture of the gall bladder took place some time ago, emptying its contents of a stone into the intestinal tract which later on caused intestinal obstruction with marked duodenal dilatation.

The history is as follows:

Mrs. B. F. R. age 64, white, female. Seen by me in consultation, while the patient was being prepared for laporatomy.

PREVIOUS HISTORY

Subject to indigestion. Sudden spells of vomiting and purging from overeating. Habitually loose bowels. Bicarbonate of soda habit after heavy meals. Operation 20 years ago for removal of fatty tumor under the breast. Vaginal lacerations in childbirth.

HISTORY OF RECENT ILLNESS

When first seen by her physician, she gave a history of 4 days of persistent vomiting of bile and 11 days of elapsed interim since last bowel movement. On examination, her physician found that the right abdomen was more rigid than the left and that the entire abdomen was greatly distended. On questioning the patient more carefully, it was ascertained that there had been no flatus passed for over a week. Her family physician, recognizing the seriousness of the condition, and believing that he was dealing with an obstruction somewhere in the intestinal tract, resorted to the usual measures advocated in such conditions to bring about desired results, viz: bowel evacuation, but failed in his efforts. He admitted the case to a local hospital. A barium meal was given the patient by the radiologist who reported a marked stagnation in the stomach, almost a 16 hour retention. After a period of 12 hours, no barium was found in the large intestines, the meal apparently meeting with an obstruction about the ileo-cecal valve. The white blood count at this time was 16,500, with 78 neutrophiles; for a number of days there was no temperature, but later a slight rise in temperature developed. Patient was vomiting persistently everything taken by mouth. The vomitus was fluid containing some mucus, but mostly oxidized green fluid, evidently regurgitated duodenal contents due to reverse peristalsis. Over a period of 7 days, medication had been directed both by mouth and per rectum in an ineffectual effort to move the bowels; it had been practically agreed that the case was one of intestinal obstruction of unknown cause and was surgical in character. I was called in to see the case when it was being prepared to be taken to the operating room. On examining the patient carefully, I observed the following points of interest, viz: the general appearance of the patient was very good. She complained only of an upper abdominal fullness, constant nausea and the awful strain of persistent vomiting

of green fluid. She expressed herself if her fullness and vomiting could be stopped, she would feel fine. Her pulse was of good volume, slightly rapid, there was hardly any elevation of temperature, but a very marked abdominal distention was present. On palpating the adbomen, a mass the size of a small fetal head could be felt over the right lower abdominal quadrant, definite rigidity, marked tympany over the opposite abdominal side and almost flatness over the upper portion on percussion. The general condition of the patient did not appear to me as alarming, and I discouraged the surgeon and attending physician from rushing her to the operating room; instead I advised first to introduce a stomach tube, believing that the upper abdominal distention was due to a large quantity of duodenal fluid regurgitated into the stomach. This was done and to our satisfaction, over half a gallon of dark green stagnant fluid without a fecal odor was removed. The patient felt relieved immediately; the size of the abdomen was greatly diminished and became softer on palpation. I then suggested the following with the idea of attempting to relieve a possible obstruction in the large bowel.

The possibility of enteroliths entered my mind, remembering my recent experience with case I, thus: One pint of warm olive oil was given by high rectal tube with the patient in the knee chest position; she was maintained in that position until sufficiently fatigued to require the dorsal position. Small doses of pituitrin were ordered every 4 hours for 2 or 3 doses. Two hours after the olive oil enema, an alum enema was administered by high tube, and this produced the first show of fecal material in over a week. Continuous warm saline flushes were then instituted with the result that the patient passed an enterolith covered with hardened fecal material about half the size of a small lemon, followed by large quantities of fecal material and gas. Considerable improvement in the general condition of the patient followed and 12 hours later, the blood count dropped to 8,500 white cells with 72 neutrophiles. With careful alimentation by means of soluble diet, small doses of castor oil also mineral oil wiith gradual addition to the diet of semi-solids, then solids as indicated, the patient made a rapid recovery.

I recollect several cases of marked duodenal dilatation, which I have seen in my clinic. In 3 cases a diagnosis of systemic lues was made, and in another case where a giant duodenum was demonstrated by the radiologist. There was a history of persistent vomiting of green fluid, the cause of the trouble was proven on the operating table to be due to a very large band of adhesions from the duodenum across the abdomen to the sigmoid. The band was released, but patient did not improve. She began to lose in weight rapidly and developed an afternoon temperature. A second exploratory revealed general milliary tuberculosis from which she finally died.

CONCLUSIONS

After reviewing carefully the facts stated above and realizing that numerous causes can produce a reverse duodenal peristalsis, terminating in duodenal dilatation, we should always endeavor to weigh the evidence in a given case suspicious of duodenal dilatation before we decide definitely on any plan of treatment. I believe that in a number of cases of duodenal or pyloric ulcer, where a gastro-enterostomy was done and biliary regurgitation develops, we should not conclude that we are dealing with a vicious circle, but we should bear in mind a possibility of a kink at the gastro-enterostomy angle or a pull at the duodeno-jejunal angle producing thereby a reverse peristalsis, with a resulting duodenal dilatation. It is also possible that a late stage of a vicious circle will result eventually in duodenal dilatation. At any rate, I am convinced of the following:

1. That a giant duodenum is not a very rare clinical and surgical entity.
2. That fecaliths or enteroliths will cause marked duodenal dilatation resulting in gastric atony.
3. That the small intestines from the jejunum down to the lower end of the ileum may remain absolutely normal and still an offending obstacle in the colon will jump across this entire tract and attack the duodenum, causing a marked duodenal dilatation.
4. That large quantities of duodenal fluid, when found in the stomach, should

make us suspicious of a marked duodenal dilatation.

5. The surgeon before opening the abdomen for relief of intestinal obstruction, should ascertain the condition of the stomach.

6. That the radiologist in studying the gastro-intestinal tract of a case suspicious of duodenal dilatation, shall not limit his observations to the upper gastrointestinal tract alone, but conclude a series of observations on the lower tract as well.

7. That reverse peristals, even without marked evidence of duodenal dilatation, shall be looked upon as a condition requiring careful study and observation to determine the causative factor. In my opinion, reverse duodenal peristalsis is the primary cause of the so-called "heartburn", a study of which subject I am making at present and the results of which I shall report probably in a paper on that subject.

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Scientific Meeting.
June 25, 1923.

DISCUSSION:

Dr. J. Holmes Smith:—In a recent number of the British Journal of Surgery there were several articles bearing upon Duodenal Dilatation and referred to by one author as Chronic Duodenal Ileus. Particular attention is paid by them to pressure of the superior mesenteric artery as a causative factor. One author lays particular stress upon undue mobility of the ascending colon. A mobile ascending colon at times pulling upon the mesentery and constricting the third part of the duodenum through the right colic artery. This condition is considered congenital, rather than acquired. In one series of 14 cases excellent results are reported from fastening the colon only.

In addition, I might cite a case under my own observation. The patient had had a gastro-enterostomy some months prior to coming under my observation. When first seen, the main symptom was vomiting after partaking all food, but little pain. Rest for a period of several weeks completely relieved the condition. The patient was again seen about eight months later, having a return of the vomiting and in addition pain over the gall bladder and in the interscapular region. Rest failed to give any relief and medical measures were of no avail. After several weeks she began to vomit large quantities of bile, which condition was unrelieved by duodenal drainage. An operation was finally performed. The duodenum seemed somewhat larger and possibly slightly rotated on its long axis. After liberating adhesions a duodeno-jejunostomy was performed. The patient was relieved of all symptoms and left the hospital apparently cured. Like Dr. Levin, I believe the condition is probably more frequent than supposed and looking back over several years of my cases I am inclined to think this condition was present rather than the gastric lesion that was suspected.

Closing: **Dr. A. L. Levin:** I wish to thank Drs. Danna and Smith for the interest they have shown in the subject presented in my paper. The subject should be of great interest to us for the reasons outlined in my paper. Our medical writers, so far, have failed to lay sufficient stress on Duodenal Dilatation either as a preoperative condition or as a postoperative complication. I am under the impression that in a number of cases with symptoms that point as evidence of gastric dilatation, that the duodenum is probably the cause of the trouble. A dilatated duodenum, for some reason, will gush its contents back into the stomach, causing considerable distress, and often alarming symptoms.

A question has arisen in my mind, where for relief of gastric or duodenal pathology, a gastroenterostomy is made ,and shortly afterward large quantities of duodenal contents accumulate in the stomach, as to whether this condition is due to a vicious circle, or the result of a duodenal kink, or postoperative adhesions causing duodenal dilatation resulting in biliary regurgitation. We can easily differentiate between a simple gastric dilatation and duodenal dilatation. As a rule, in gastric dilatation we will find large quantities of

gastric juice and food wtihout definite biliary mixture, whereas in the duodenal dilatation, especially of the giant type, as described in this paper, there is always found large quantities of regurgitated bile.

I shall continue my observations on this most interesting subject.

SOME INTERESTING OBSERVATIONS FROM THE SERVICE OF THE NEWLY-BORN AT TOURO INFIRMARY.*

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The newly-born service at Touro Infirmary which was inaugurated by me has now been in operation for about two years. This service which has been described as the "Newly-Born Service" (Southern Medical Journal Vol. XV No. 2, February 1922, pages 115-120) and its method of operation gone into detail in "The Management of the Newly-Born Service" (Archives of Pediatrics, April 1922) has already afforded the opportunity for several studies of scientific value. In May, 1922, the first investigation, "A study of the Shadows in the Thorax of the Newly-Born" was presented in Washington at the Congress of American Physicians and Surgeons before the American Pediatric Society. In May, 1922, before the Academy of Medicine at Kansas City my address was upon "Observations on the Breasts of the Mothers of the Newly-Born" (Annals of Clinical Medicine, Vol. 1. No. 3, November, 1922.) At the present time several pieces of investigational work are in progress, especially some upon rickets, one of which will be presented before the American Pediatric Society in French Lick next month. As it will be seen this service affords unusual opportunities for observation and study as it includes that period of life beginning from the time the cord is cut. In this service also conditions are recognized which otherwise would go unnoticed.

The subject of this paper was selected so as to demonstrate the value of the close observation of the newly born by presenting a few of these cases. As the time is limited I will present only four cases which are of unusual interest.

Case one. Baby L. White male. It was noticed shortly after birth that there was present a jaundice which steadily became more marked. On the third day his temperature ranged from 101 to 102 degrees F. and he did not nurse well. His stools up to this time were apparently normal, though they had not changed the slightest in color. He weighed seven pounds and fourteen ounces at birth, was well nourished, and apparently well developed. On the second day his spleen was quite palpable and his liver was thought to have increased in size over that of the day previous, extending, on the third day to 1 inch and a half below the costal border. The gall bladder was not felt. The jaundice was becoming more pronounced. A blood Wasserman was found to be negative. The urine contained an unusual amount of bile, the diaper being stained a deep yellow. Stool examination showed the absence of bile. The blood picture was negative. Before the appearance of the mother's milk a lactose solution was given so as to assist in warding off an acute inanition. The physical examination was negative with the exception of the jaundice, the urine, the stools, and the temperature. From a diagnostic standpoint the case was of unusual interest. To determine the cause of jaundice it was necessary to consider, first, that jaundice which is found with the pyogenic infections; second, that jaundice which is found in connection with congenital malformations; third, that jaundice which is found with interstitial hepatitis (which is usually associated with congenital syphilis); and, fourth, the idiopathic jaundice of the newly born. The temperature in this case complicated the picture. It was explained by the acute inanition of the newly born. The pyogenic diseases of the newly born were excluded, first, by a thorough examination of the patient in which there could be found no lesion for the entrance of an infection, and second, because the blood count was negative and there was no growth upon culture. The urine also was excluded as being a source of infection as its chemical examination was negative and it contained no pus, and was sterile. The jaundice was an in-

*Read Before the Louisiana State Medical Society, April 24-26, 1923.

tense and progressive one and was not of the type that is found in the pyogenic infections, which type is usually of a mild character. The jaundice due to an interstitial hepatitis was excluded first, because the baby showed no other lesions of congenital syphilis, and second, because the Wassermann was negative. The idiopathic jaundice which is found in 33 1-3 per cent of all infants born was excluded, first, because this jaundice began at birth and was progressive, second, because the urine contained much bile and, third, because there was an absence of bile in the stools. The above is the opposite to that seen in the idiopathic jaundice. Because of the foregoing reasons the condition was diagnosed as one of jaundice due to malformation of the biliary apparatus. The liver was enormous in size, increasing day by day and no gall bladder could be palpated, so for these reasons, the diagnosis was made of a congenital malformation of the hepatic duct. In congenital malformation of the biliary ap paratus it is extremely interesting to make a differential diagnosis as to the site of the malformation. If the malformation be of the common bile duct there is present both an enlargement of the liver and a distention of the gall bladder. If the malformation be of the cystic duct it may go unnoticed, inasmuch as there is no enlargement of the gall bladder and no enlargement of the liver, and there is no jaundice. In malformations of the hepatic duct there is enlargement of the liver but as distention of the gall bladder. This was the observation made in this particular case. An autopsy was permitted and the diagnosis confirmed. This case was reported in more detail at a Touro Clinical staff meeting.

Case two. Baby R. white female, born December 21st, 1922, weight 6 lbs. 5 1-2 oz. Showed in the routine radiographic observation of the thorax an unusual shadow reported upon as follows:—"Radiographic examination of the chest shows the heart distinctly abnormal in outline, with the right side filling the upper portion of the right chest. It is impossible to classify the type of shadow." This report showed that the shadow could not be placed in any of the groups that we made in our previous study. The patient showed no unusual symptoms and no disturbances of respiration nor of circulation. On December 28th, 1922, two days later, a control radiographic examination was made showing the following:—"Radiographic examination of the chest shows the shadow as described still present, though it is somewhat smaller." The baby's clinical progress was absolutely normal. She returned to the newly-born out-patient clinic at the usual time for the babies born in the service, namely, at her fourth week, when another examination was made with the following report:—"Radiographic examination of the chest shows a moderate enlargement of the heart and no evidence of a thymus." The last radiographic examination on March 15th, 1923 is as follows: —"Thymus apparently normal at this time. Moderate enlargement of the heart." This child has progressed in an uneventful manner. This case is of especial interest, inasmuch as it shows a shadow which can exist without any clinical manifestation, and because if abnormal clinical symptoms had presented themselves, these symptoms might have been attributed to this unusual condition existing in the thorax. This emphasizes the necessity in a negative way to not arrive at conclusions too rapidly. This baby today weighs fourteen pounds and twelve ounces at the age of three and one-half months.

Case three. Baby L. white, male, born December 24th, 1922. Birth weight 10 pounds and 10 1-2 ounces. Was born at full term with a normal labor and vertex presentation. Was the second child of apparently healthy parents. Physical examination showed an increased separation of the bones of the head making the sutures larger than usual. Head normal in shape, lungs were normal, heart showed slight systolic murmur, extremities were held fixed. Internal strabismus of left eye and ec-chymosis of both eyes, some slight rigidity of the neck. The temperature rose immediately following birth, reaching 105 degrees within 24 hours. He cried at intervals during the first day and swallowed with difficulty. He twitched considerably. He was given lactose solution which he only partially took owing to his inability to swallow. Blood examination showed a hemaglo-

bin of 95 per cent, total red cell count 5,825,000, total white cell count 18,250, small mononuclears 32 per cent, large mononuclears 2 per cent, neutrophiles 66 per cent, eosinophiles 0 per cent, basophiles 0 per cent, total 100 per cent.

His Wassermann was negative. His urine was negative with the exception of an occasional red blood cell. Suspecting the possibility of a hemorrhage a spinal puncture was done and it showed fluid under slight pressure otherwise nothing of any significance was noted—Wassermann and colloidal gold test were negative. Owing to a slight injury to a blood vessel in the spinal puncture the cell count and the globulin examinations were unable to be determined. Examination of the eye grounds by Dr. Feingold showed the fundi to be negative. The diagnosis was made of a cerebral contusion. The patient improved after the spinal puncture but continued unable to nurse, so that it was necessary to feed him through a tube. Temperature reached normal on the evening of the day following the spinal puncture and remained down from then on. On the morning of the 27th when the baby was three days old he had a cyanotic attack and then had two convulsions, also had severe choking spells. The symptoms were treated as they arose. The next day he had another convulsion. The temperature remained stationary during these convulsions. From then on he began to improve and on December 30th when he was six days old he was put to the breast. Gradually the breast was substituted for the tube feedings until all the feeding was by breast. He was discharged from the hospital on January 10th. This patient was returned to the out-patient newly-born clinic on his regular day when he was four weeks old weighing 10 pounds and 8 ounces. He now weighs 15 pounds and 7 ounces and is three and one-half months old.

Case four. Baby McC. white, male, born March 26th, 1922. Family history: Father, now 24 years of age and in good health. About two years ago he had attacks in which he became unconscious and which attacks lasted from a few minutes to an hour. Aside from a yellowish vaginal secretion for a number of years, the mother was healthy, now being 21 years old. During the pregnancy the mother was treated for arthritis. There were no previous pregnancies. Patient full term and weighed 6 pounds and 13 ounces at birth. The labor lasted 7 hours when the patient was delivered by low forceps. Physical examination of the baby at birth was negative. On the third day there was a slight odor at the umbilicus. On the fourth day the temperature rose to 105 degrees F. Physical examination at this time showed heart and lungs to be negative, liver somewhat enlarged, abdomen tense and distended, evidence of cellulitis around umbilicus, no other abnormalities noticed. Blood culture taken on the fifth day was negative. Culture from umbilical secretion on the same day showed the presence of staphylococci. Examination of the blood showed the following:—Total white cell count 34,500, neutrophiles 89 per cent, small mononuclears 7 per cent, large mononuclears 4 per cent.

A diagnosis was made of omphalitis. On the fifth day the child had two convulsions during the height of the fever. Lead and opium compresses were applied to the umbilicus, the symptoms of the patient were treated as they arose. The patient continued to run a septic temperature to as late as the tenth day when it reached 105 degrees F. in the afternoon. For the following four days the maximum for the day was between 101 to 102 degrees F., and from then on there was apparently no fever. He was fed with difficulty, refused to nurse and lay listless in his crib. He was fed by tube until the seventh day when he was able to take some breast. Complemental feedings were given to meet his requirements. During this period the baby's weight was fluctuating and was never higher than 7 pounds nor lower than 6 pounds and 6 ounces. The stools were frequent, watery, greenish brown and on several occasions contained blood in variable quantities. During this period the inflammation of the umbilical cord subsided and the size of the liver remained about the same, namely its lower border being on a level with the umbilicus. No fluctuation could be felt over the liver. The baby showed a jaundice of a moderate degree. A blood Wassermann on the 25th day after birth was negative. Upon my return from the meeting of the Congress in Wash-

ington after an absence of one week, on May 9th, when the patient was 1 month and 14 days old it was noticed that the liver had increased a little in size so that its lower border was slightly below the umbilicus. Some fluctuation was noticed over the liver. The abdomen was distended and tense and the jaundice had continued. The area of fluctuation was aspirated just below the costal border and 350 c. c. of brownish, foul smelling fluid were obtained. The fluid was removed with great care, the patient being closely watched for any bad symptom. None however, presented itself. The patient was rolled over on his side until the point of aspiration was so placed as to facilitate further aspiration with the assistance of gravity. The fluid was sent for examination and the report from the laboratory showed the following:—"Smear shows pus cells in various stages of degeneration. No other morphological elements found. Culture negative". After aspiration the distention disappeared and the abdomen became relaxed. The liver decreased in size. The stools became normal and the patient began to nurse more vigorously and to gain in weight. The abdomen was closely watched and there was no reaccumulation of the fluid. After the first great reduction in size of the liver it continued to diminish gradually. On May 29th he was discharged from the hospital having improved in every way. Patient returned to the clinic on June 1st.. 1922. when he was 2 months old weighing 6 pounds and 14 ounces. There were slight evidences of rickets. The liver was palpable. On August 17th when 4 and 1-2 months old he weighed 10 pounds and 12 ounces. On October 5th when 6 months old he weighed 14 pounds and 14 ounces. Muscles were good, baby sat alone, spleen was palpable, liver 1 1-2 inch below costal border. At the age of 9 months the liver was palpable 1 1-2 inch below costal border and the spleen was palpable. Blood picture:—Hemaglobin 95 per cent, total red cells 4,990,000. Total white cells 8,050, small mononuclears 54 per cent, large mononuclears 6 per cent, neutrophiles 41 per cent, color index .96. Urine examination was negative with the exception of a heavy trace of indican, and the stool was negative. At the present time the baby is one year old and weighs 20 pounds and 8 ounces, and is perfectly healthy.

I have these four babies here for your inspection.

DISCUSSION.

Dr. Robert A. Strong (Pass Christian, Mississippi): Incredible as it may seem, that period from the time the child is born and the cord is cut, up to the sixth or eighth week, has been very much neglected up to a very few years ago. Furthermore, the Newly Born Clinic at Touro established by Doctor DeBuys is perhaps the first established in the country.

The subject that Dr. DeBuys has presented the Society today has more recently received a great deal of attention from pediatrists and from pediatric sections of various organizations throughout the country. I think one of the livest discussions I ever heard was at the Hot Springs meeting of the Southern Medical Association two years ago, when Doctor DeBuys read a paper on this subject. As one party very aptly put it—and I cannot help repeat it—the baby in the hands of the average obstetrician receives about as much attention as the placenta.

An examination of the statistics that Doctor Gallant has charted on the board will show you some startling things about the babies in New Orleans. In other words, the death rate in the first few days is compared with the next few weeks. An examination of the chart would be well worth while.

We know very little about many of the early conditions, but such clinics as have been established at Touro will give us an excellent oportunity to study these and there is one thing certain—you may say the pediatricians are to blame, and to a certain extent they may be—but if you expect anything from the pediatrician you must get the baby to him as soon as the cord is cut, and not three months after when the baby has a nutritional blow-up.

Dr. L. von Meysenbug (New Orleans): I wish to say that it has been my pleasure and privilege to have worked in this newly born clinic with Doctor DeBuys for the last year and a half, and I believe that the city owes a debt of gratitude to Doctor DeBuys for establishing this service. One of the important things he has done is to show the mothers themselves and others interested, that it is possible for 99.9 per cent of babies to be breast-fed, and that some diseases, such as rickets, are preventable, chiefly by the administration of cod liver oil as a prophylactic. Breast feeding has been practiced without exception, and only in a very few instances have babies been given formulas to the exclusion of breast feeding, and that was for some very definite indications. Otherwise, I cannot remember a baby that was not bread fed for nine or ten months and up to a year.

I think we ought to hear from our friends, the obstetricians, as to what they think of the newly born service.

Dr. R. Crawford (New Orleans): With reference to what can be done in looking after babies newly born, I wish to say that the Child Welfare Association of New Orleans has an obstetrical service in connection with its pediatric service. Within twenty-four hours after the birth of each of its babies, a pediatrist is sent to examine the child and to instruct the mother in its care. In the past year the death rate for babies under one year in New Orleans was between eight and nine out of every one hundred born. The death rate among the babies in care of Child Welfare was between two and three out of every one hundred born. The Welfare Association works in parts of the city where the people are most crowded, and hygienic conditions are worst, where one might expect the highest mortality.

Dr. L. R. DeBuys (closing): At the meeting at Hot Springs to which Doctor Strong referred we had obstetricians present from different parts of the country. They were inclined to look upon the service which I had developed, as something antagonistic to the obstetrician. In my paper I stated emphatically the reverse, and that what I wanted to do was to cooperate with them—to develop a more cooperative spirit between the pediatrist and obstetrician; and that all I was pleading for was an opportunity to take care of the baby immediately after it is born. A study of the institutions throughout the country which I made before that meeting showed that in most institutions the baby after birth was not even admitted into the institution as a patient, but was looked upon more as a by-product and usually it was not even known whether it was a boy or a girl. At the meeting we had quite a heated discussion, at the end of which I was approached by some of the obstetricians who were opposed to the plan, had frank discussions with them and when they left they were thoroughly converted and were in favor of the idea. In New Orleans, at the Touro Infirmary, we have a most cooperative spirit between the pediatric and obstetric services. As a result of the address at Hot Springs I was invited to speak before the Academy of Medicine of Kansas City, where there had been quite a little friction between the pediatrists and the obstetricians, and I am glad to say that a short time ago I received a communication from one of my friends there who said that the result of the meeting was very satisfactory to both pediatrists and obstetricians, that they are working in harmony and that those who were opposed had been thoroughly converted and were enthusiastic about the new born service.

This service has grown to a large size. We have a follow-up service in which the cases come every fourth week. The maximum attendance was reached last Thursday morning, when we had 91. Every one of them was thoroughly cared for. That is a big crowd. We would be glad to have any of you visit us while in the city.

THE CHARITY HOSPITAL OF LOUISIANA.

By ALBERT E. FOSSIER, A. M., M. D.

(Continued from last issue.)

The correction of the hospitalism then existing through the modernization of the Charity Hospital gradually dispelled the dread and reluctance of the afflicted to seek treatment from the institution. This fact is attested even as early as the year 1896 by House Surgeon Bloom, who remarks as follows: "The Hospital statistics present direct attention to the enlarging field of work and to the confidence reposed by the unfortunate poor in the expediency of its service. The once popular fallacy so prejudicial to the interest of those in need of hospital care, namely, the dread of hospital confinement is being rapidly dissipated; and this, together with the manner in which their entrance into the institution is facilitated, succinctly explains the increasing number of admissions, and in all conditions of diseases, that was noticeably the fact during the year 1895. This prudent awakening of the value of scientific hospital attention will, I believe, become more markedly discernible from year to year, and must, in its proportionate increase, materially add to the running hospital expense."

The year 1895 records the completion of the A. B. Miles Amphitheatre. This magnificent operating room with all the necessary accessories established modern surgery on its present high pinnacle in the Charity Hospital. The old germ-laden Amphitheatre the stage of so many autopsies and lectures on pathology, and in which our predecessors had once displayed their surgical skill, became a matter of history. To our younger surgeons this comparatively recent crime of asepsis will appear medieval; yet, the time is within the memory of many of our confreres when operations followed autopsies not alone in the same room, but even on the same table. There were many strenuous objections and expressions of displeasure were rife, and the attention of the Board was directed to such antiquated proceedings, however, the march of progress is slow, though certain, and the belated construction of the present

*The author is not responsible for phraseology of quotations, as they are taken verbatim from text.

Amphitheatre was the realization of the visiting surgeons' most ambitious hopes.

In 1897 the square of ground adjacent to the Hospital having a frontage of 247 feet on Tulane Avenue (not including the width of the street and the side walks on South Robertson street, which the Hospital acquired), and a depth of 430 feet to Gravier street, between parallel lines, was expropriated by the Charity Hospital. The cost amounting to $58,000.00. The acquisition of this large portion of ground was the beginning of the present "Greater Charity Hospital."

The long expressed hope of former House Surgeons and Boards of Administrators was realized May 28th, 1898, when the cornerstone of the "Children's Hospital," the Richard Milliken Memorial was laid. It was dedicated on May 4th, 1899. In the Hospital Report of 1897 is found the following appropriate words of appreciation: "For this work the State will owe a debt of gratitude to the philanthropy of a noble woman, Mrs. Richard Milliken, who in furnishing means for the erection of this grand monument to the memory of a beloved husband, becomes a benefactress to the afflicted children of our State and a blessing to the poor, whose sorrows will be lightened and lives made happier in the knowledge that whatever betides, their precious ones may be cared for with equal facilities, comfort and skill, as those of their more fortunate brethren. As administrators of the Hospital and as citizens of Louisiana, we return our sincere thanks for the munificent gift and great charity, the value of which is incalculable."

The Hutchinson Memorial Home for Nurses followed in 1901. Mr. Hutchinson munificently donated the sum of $50,000.00 for the erection of this magnificent structure, and dedicated it to the memory of his wife. On April 21st, 1909, the Delgado was opened for occupancy and the patients were transferred thereto from the main building. This building was erected from funds donated by Mr. Isaac Delgado, and was a tribute of affection to the memory of his deceased uncle and aunt, Mr. and Mrs. Samuel Delgado. Its approximate cost was $200,000. It has three large operating rooms and a capacity of 140 beds. This important addition to the Hospital Plant, greatly relieved the surgical congestion then existing in the Miles Amphitheatre.

The Pasteur Institution was established in the Hospital in the year 1903, in charge of Drs. Pothier and Couret.

In 1906, House Surgeon Batchelor reports to the Board of Administrators thusly: "For the first time in the History of this Hospital, during the past year, a complete medical history of every patient entering the Institution has been written and placed on file in the Registration Bureau. Most of the efficiency of the Bureau is due to the enthusiasm and splendid work of the Registrar, Dr. G. Farrar Patton."

In 1910, Doctor Geo. S. Bel, Chairman of the Medical Committee, and House Surgeon J. A. Danna, proposed many improvements, which would have resulted in the highest standard of hospital efficiency. Unfortunately the ever present determent "insufficient funds" deferred the inauguration of these essential changes and additions to the Hospital plant.

A movement of political reform swept the State in 1912, resulting in the election of Governor Luther E. Hall. His administration marked a new period in the history of the Hospital. Immediately plans were on foot for the depoliticalization of that Institution, and vital changes contemplated in its management. The Governor appointed to membership on the Board of Administrators men without the pale of politics, who were actuated only by the laudable ambition of placing the Charity on the highest pinnacle of efficiency. This Board merits praise for some of the most radical and likewise beneficial reforms and changes ever effected in the existence of the Institution. For in the first time in its history a Board was attentive to the just criticisms of a discouraged and demoralized visiting staff, and consulted with them concerning the changes necessary for the modernization of the Hospital. For the purpose of securing an unbiased judgment, Dr. S. S. Goldwater, an expert on Hospital management was requested to make a survey of the Hospital and to report his recommendations to the Board of Administrators. The Doctor's report begins thus: "On December 19th, 1912, in pur-

suance of a resolution previously adopted by your Board, you invited me to visit the Charity Hospital, to familiarize myself with local conditions, and the present organization or system of administrations, and then to report upon the present conditions and system of management, and to suggest such changes, if any, in the organization or system of management in all department, as might appear to be advisable."

The outstanding recommendation proposed by the Doctor was the substitution of the House Surgeon by a Superintendent, which recommendation he embodies in the following: "Of fundamental importance is the appointment of an Executive Officer, who should be charged by the Board of Administrators with the responsibility for the management of the Hospital, and answerable to the Board for the maintenance of order and enforcement of the laws and rule of the institution. This officer should be free from all the duties in connection with the actual treatment of patients."

Next in importance was the reorganization of the Visiting Staff. These recommendations were accepted and adopted and remain in force to the present day.

Dr. Goldwater also severely criticised the management of the Pathological Department, and was supported by the Board of Administrators according to its report, thus expressed: "The Board has made radical changes in this Department, and I think in a short time, not only will the statistical returns of the work of the Pathological Laboratory be a great credit to the Hospital but a benefit to medical science."

Another perplexing matter confronting Dr. Goldwater was the one of inadequate sleeping accommodations provided employees. This problem was solved by the Board of Administrators leasing for a term of five years the Polyclinic Building on Tulane Avenue. This building was used for the Outdoor Clinics, and the space they vacated afforded suitable living accommodations for the help. The occupying by employees of beds in sick wards was thus remedied. Among many other recommendations by Dr. Goldwater was that of establishing a social service department which would direct its attention to the proper disposition of patients chronically ill, or of convalescents who no longer required care of a hospital. At the suggestion of the Board of Administrators, Dr. Goldwater introduced the name of Dr. C. D. Wilkins of Wilkes Barre, Pa., for the superintendency. Dr. Wilkins took charge of the Institution October 1, 1913.

Vice-President Hayne in his 1914 report expressed his satisfaction at the progress made under the new regime, remarks as follows: "After an experience of eighteen months the Board is convinced that the management of the Hospital by a Superintendent is an absolute necessity, and we consider that we were fortunate in having obtained services of the present superintendent, Dr. C. D. Wilkins, whose indefatigable energy, and the deep interest he takes in his work, have enabled us to make such great improvements, which have added so materially to the comfort of the employees and the welfare of the patients."

A uniform system of Hospital accounting was inaugurated on January 1, 1914, by Secretary and Treasurer Fred W. Mathews. His report of that date contains the following: "By this system comparison with other hospitals can be made on a fair and intelligent basis; for instance. the Presbyterian Hospital, New York City. These comparisons are of much value and interest not only to officials of the Institution, but also to the public who may be interested in the work and results obtained. In former years this Institution's accounts were kept in a manner peculiar to itself, and my predecessors followed each other along the same lines. I have endeavored to compile a comprehensive statement showing expenditures made, revenues received, assets and liabilities." Mr. Mathews officially assumed office duty July 1, 1913, succeeding Captain L. P. Delahoussaye who died June 3, 1913.

In the annual report, 1914, of Frank B. Hayne, Vice-President of the Board of Administrators, is the following illuminating chapter as to the cost of dispensing the service rendered by the Charity Hospital.

"The income of the Hospital from State appropriation, $217,000; from authorized fees, etc, (subject to fluc-

tuation), $44,713.78; sundry donations, $3,397.33; old buildings sold, $455.00; from trustees, Isaac Delgado Memorial Fund, $5,733.32; sundry refunds, $597.22. Income from all sources for maintenance, $271,806.64.

Total operating expenses .. for the year	$302,784.32
Last receipts	271,806.64
Deficit to date.....	$30,977.66

With the patients remaining over January 1, 1914, and the admissions, there were treated during the year 17,449, or 2,393 more than in 1913.

Of the admissions, 9700 were white, and 7042 colored. Of white adults there were, males 5,157; females 2,823; boys 966; girls 749. Of the colored adults were, males, 3,476; females, 2,989 boys 314; girls, 263. The deaths numbered 1,867, more by 101 than in 1913. The gross death rate was 10.69 percent. and the net, leaving out subjects for Coroner's inquest, of which were 202, and other deaths within 24 or 36 hours, reduces the percentage to 8.06 percent. In the white and colored maternity service there were 521 obstetrical cases, with a maternal mortality of 1,034 percent. The ambulance calls numbered 2,832. The total number of accident cases, 14,276. Operations performed in Miles Amphitheatre, 3,198; in Delgado Memorial, 3,579; total number during the year, 6,786. In the Out Clinics, 30,547 were treated, and 127,559 consultations given. Prescriptions filled by the Chemist, 68,463. In the Pathological Department, 8,355 specimens were examined, and 453 necropsoes were made. In the Pasteur Institute 975 applied, of whom 353 were treated with no deaths recorded. The Registrar reports 16,867 tabulated histories.

The Training School for Nurses shows a total enrollment of 109 during the year. Of this number there were graduated 33. The Senior class of 1915 will comprise 25 pupils and the total number on December 31st was 84. The total admissions for the year 1914 were 23 percent. greater than for the year 1912, which shows that the increased appropriation granted us by the Legislature was an absolute necessity."

At the present time the Hospital has a capacity of one thousand one hundred and forty-two beds. The total number of patients hospitalized in 1922 was 18,104, of which 1,677 died, making a gross death rate of 9.19 per cent. There were 1,008 births in the Obstetrical Department. The Pathological Department reported that 37,664 examinations were made, and that 377 autopsies were performed during the year. Two hundred and eighteen suspected cases of rabies were treated by the Pasteur Institution. The large increase in the work of X-ray Department from 5,065 skiagraphs in 1916 to 18,257 in 1922, indicates the fast growing importance of that great discovery in the diagnosis of medical as well as surgical diseases. In the Pharmacy, 114,478 prescriptions were filled and 11,220 packages of serum distributed. There were 14,006 surgical operations performed in the Hospital, which approximates about 39 daily.

The following tableau taken from the Treasurer's Report is illuminating as to the resources of revenue of this great Institution for the past two years.

COMPARATIVE STATEMENT OF CURRENT REVENUES

For Years Ending Dec. 31st, 1922

GENERAL FUND
RECEIPTS.

Appropriations, State of Louisiana—		
For Support and Maintenance, Act 75 of 1920.....	$215,000.00	
For Improvements, Act 75 of 1920	10,000.00	
For Support, Maintenance and Improvements, Act 119 of 1921	100,000.00	
For Support and Maintenance, Act 12 of 1922.....	285,000.00	
Appropriation, City of New Orleans—		
For Social Service Department	1,916.59	
Total		$611,916.59
Legal Fees, Authorized by Legislature—		
Live Stock Inspector, City....	$ 12,853.45	
Licenses, City	15,873.00	
Auctioneers, State	8,853.37	
Total		$ 37,579.82
Hospital Fees, Administrative—		
Official Undertaker	$ 2,000.00	
Legal and Burial Certificates.	843.10	
Ambulance Service	1,083.00	
Serum	257.90	
X-Ray Examinations	543.50	
Total		$ 4,727.50
Hospital Income—		
Notes Receivable, Rent.....	$ 585.36	
Gate Donation Box.....	648.81	
Swill Sold	25.00	
Sundry Sales	251.63	

Suspense Account	.....
Patients Deceased	25.30
Patients, Pay (Workmen's Compensation)	3,806.00
Delgado Fund for Trustees	4,500.00
Milliken Fund Interest	2,484.90
Interest on Deposits	1,983.26
Interest on Bonds	6.98
Rent on Properties	4,561.48
Donations—Unrestricted	3,434.27
Social Service Department Donations	3,452.41
Social Service Department Refunds	2,566.89
Total	$ 28,332.29
Total General Fund	$682,556.20

SPECIAL FUNDS.

Donations	$ 50.00
Legacies	2,616.15
Interest on Deposits	637.68
Interest on Investments	4,054.32
Investments, Matured or Sold	55,061.47
Sr. Stanislaur Fund	87.00
Transferred from General Fund	20,878.01
Total Special Funds	$ 83,384.63
GRAND TOTAL RECEIPTS	$765,940.83

The following report of operating expenses of the Treasurer for the year ending December 31, 1922, gives an excellent idea of how so much had been accomplished on so small a revenue:

REPORT OF THE TREASURER

THE CHARITY HOSPITAL OF LOUISIANA, NEW ORLEANS

Statement Showing Method of Figuring "Cost Per Patient Per Day," for Year Ending December 31, 1922.

OPERATING EXPENSES

	Ward Patients	Out-Patient Department	Total
Administration Expenses	$ 38,537.14	[1% 389.26]	$ 38,926.40
Nursing	40,282.24	.....	40,282.24
Physicians	9,625.00	.....	9,625.00
Orderlies and Ward Employees	32,415.53	.....	32,415.53
Drug Store, Salaries	2,242.50	[25% 747.50]	2,990.00
Medical and Surgical Supplies	36,223.75	[10% 4,024.86]	40,248.61
Apparatus and Instruments	8,407.21	[5% 442.48]	8,849.69
X-Ray Department	16,727.84	[10% 1,858.64]	18,586.48
Registration Bureau	2,198.29	.....	2,198.29
Clinic Salaries	.....	[Actual 7,678.27]	7,678.27
Social Service Department	1,585.42	[20% 396.36]	1,981.78
Miscellaneous	1,260.52	.....	1,260.52
Ambulance Service	5,099,74	.....	5,099.74
Pathological Department	14,742.14	[10% 1,638.01]	16,380.15
Housekeeping Department	74,065.54	[2% 1,511.54]	75,577.08
Kitchen Department	13,227.39	.....	13,227.39
Laundry Department	17,033.59	[2% 347.64]	17,381.23
Stewards' Department	126,207.86	.....	126,207.86
General House and Property	105,267.66	[1%]	106,330.97
Total Net Operating Expenses	$545,149.36	$20,097.87	$565,247.23
Total Patient Days Treatment	354,633	.....	.....
New Cases Out-Patient Department	.....	40,640	.....
Visits Out-Patient Department	.....	93,090	.....
		1,063.31	
COST	1.537	.15	

The care of these patients was entrusted to a staff of 164 nurses, and of over 40 internes. The treatment was directed by a Visiting Staff of approximately 250 doctors.

Thus is shown the phenomenal growth of our Hospital, not only during the past hundred years but even during the last few years. If the past is a criterion as to what is to be expected in the future, necessary funds must be obtained to provide for the greatly increasing cost of hospital maintenance, and the enlarging of this now overcrowded quarter of the Institution. The present Board of Administrators has recognized and has called the attention of the public and of the Legislatures of this state to these needs. Their appeal for alleviation and the comfort and the proper care of the worthy sick poor of this community demands consideration. It is devoutly to be hoped that these untiring efforts will be rewarded, and that their good and faithful stewardship will mark another epoch in the history of the growth of the Charity Hospital.

This Institution, throughout its existence, was handicapped by three deplorable disadvantages; towit: insufficient funds, over-crowding and the abuse of Charity by patients fully able to pay for medical attention. All succeeding Boards bewailed this fact, but have never been able to remedy this condition and eradicate the abuse. It was rampant in the past as it is today. The author throughout the course of this history has noted many references by Boards of Administrators pertaining to these drawbacks to the economic management of the Hospital.

The provision of sufficient funds for the proper support of this magnificent institution rests with the Legislature of the State. This burden has increased from year to year, and it may not be amiss to mention that the cost of maintenance of a modern hospital is rapidly increasing, and unless these expenses are met with ample appropriations the patients are bound to suffer neglect therefrom.

Today we bewail the overcrowded condition of the Charity. Beds only large enough to accommodate one person are shared by two, to the extreme discomfort and torture of these feverish suffering patients. It was broadcasted that additional buildings are absolutely necessary to provide more room for the patients as well as for the help, and to make necessary improvements. An appeal was made to the people by the Board to liberally subscribe in order to supply these grevious deficiencies. The prevailing opinion of the medical profession of today on this all important subject of hospital abuse is well expressed by Dr. Paul Gelpi, President of the Louisiana State Medical Society, in his annual report to the Society. Hear what he says: "The question of hospital abuse is receiving the attention of physicians in this section and elsewhere. The benefits provided for the poor are wantonly and increasingly abused and deliberate impositions are heaped on the medical profession. I recommend that the Hospital Abuse Committee be instructed to get together with similar committees of the Orleans Parish Medical Society and Charity Hospital Staff with a view of taking complete survey of the Institution and prepare suitable laws to correct the evil now for enactment of the next Legislature." And again, Dr. H. W. Kostmayer, President of the Orleans Parish Medical Society, in his inaugural Address strikes the following keynote on this vital issue: "The trouble is the Hospital serves by far too many. It has long been the boast of this community that Charity Hospital asks no questions, but serves rich and poor alike. Think what folly this boast contains: The daily average number of patients is about 885 at a daily per capita of $1.60. I am convinced that this daily average should be reduced by at least 100, a daily saving of $160.00 and a yearly reduction of $57,000! Apply this same principal to the Outpatient Department and it is readily discernible how much more efficient the Hospital could become for those actually entitled to its benefits. In this matter we certainly should not stop at Charity Hospital, but we should regulate the Charity done by each and every medical and surgical institution in the City. This not simply to increase the income of the profession, which it most certainly would do, naturally, but primarily to protect the worthy and needy poor against the impositions of the unscrupulous well-to-do. Social Service seems

the logical stepping stone to this end, but the Hospital Abuse Committee may devise more direct means. We certainly ask your serious consideration of this age-old problem and especially assign its active development to the Hospital Abuse Committee."

Dr. Goldwater in his Charity Hospital survey recommends that: "An effort should be made to exclude from the Hospital persons able to pay for private care." Overcrowding could be relieved by the elimination of this misuse of charity and violation of hospital privileges, and it is devoutly hoped that some means will eventually be devised whereby a refuge can be denied to all but the eligible poor. The State has no greater duty than the care of its indigent sick, and it should strive to provide amply for their needs.

The cry of reform and expressions of dissatisfaction are echoing through the realms of time, and to this very day, nearly two centuries since the birth of our great Hospital, we hear the self same pleas and complaints similarly followed by varied suggestions for betterment; yet, step by step, and year by year, it has grown from a hovel housing a few indigent poor, to the present magnificent institution, one of the largest in the country.

On four occasions the Hospital was forced to appeal to the public for funds to make urgent improvements, and to properly care for its patients. The first of these drives was made in 1884. It was to provide funds for necessary additions and improvements in the Hospital.

The following report made by Edwin Marks, Secretary and Treasurer of the Building and Sewerage Fund in January 1884, records this important event: —"The Governor recommended "An appeal to the citizens of New Orleans and the Parishes for voluntary donations for the good work, the remote meeting of the General Assembly and constitutional limitation of appropriations rendering it doubtful for the obtainment of State aid." Upon receipt of the Governor's letter, the Board of Administrators, at their meeting of February 16th, appointed a committee of five to prepare a plan of action whereby the suggestions of his Excellency could be carried out. In due course and after proper publication the citizens of New Orleans were invited to assemble in the Mayor's parlor with a view towards devising ways and means to carry out the project, and a meeting was held at which several of the leading merchants were present, such as Messrs, A. H. May, His Honor, Mayor Behan, Albert Baldwin, W. B. Schmidt, E. J. Hart, Adam Thompson, I. L. Lyons C. H. Hyams, Isidore Newman, Edward Booth and others, as well as the Board of Administrators. An organization was at once entered into, with A. H. May, Esq. as Chairman, and proceedings at once instituted by the appointment of committees on the different callings, trades and professions, for the purpose of soliciting contributions." The work progressed under these auspices. The magnificent sum of $32,-000.00 was the result.

The centenary of the Charity Hospital as a State Institution was celebrated on the Hospital grounds with appropriate ceremonies on December 8, 1911. This was followed by a fair held from December 11th to 16th, inclusively, the purpose of which was to raise money to meet the demands of the Hospital. The efforts of the public spirited ladies and gentlemen were rewarded by the realization of the splendid sum of $34,200.00.

At a special meeting of the Board of Administrators August 25th, 1915, the following resolution was passed:

WHEREAS the Charity Hospital of Louisiana is in urgent need of funds in order to maintain the treatment of its patients on the same standard which has prevailed in the past;

Resolved, That the Board of Administrators of the Charity Hospital of Louisiana invoke the aid of the public of all the entire State in raising a sum of money adequate to its needs by means of the Charity Hospital International Fair, which it has prevailed on a number of prominent citizens to undertake in its behalf.

Pursuant of these resolutions "C. H. I. F." Charity Hospital International Fair was given at the Washington Artillery Hall, October 3rd, to 11th, 1915, inclusive, under the auspices of the New Orleans Press Club. There was a general response from the public and the magnificient sum of $53,114.42 was realized. The great success of the Fair

was due to the indefatigable efforts of the following committee: Harold W. Newman, Chairman, Chas. Weinberger, Vice- chairman, Chas. A. Farwell, Treasurer, Emile V. Stier, Secretary.

These drives are of especial interest today in view of the magnificent efforts of the present Board of Administrators and of Superintendent, Dr. Wm. W. Leake. Their appeal has met generous response not only in the City but in the Parishes as well. These gentlemen may be justly elated and gratified at their success as the amount collected will approximate tenfold that of the two first efforts.

A revision of the inscription on the marble tablet in the main hall of the Hospital is necessary. It is generally acknowledged by students of the history of this great Institution that it was founded by Jean Louis in the year 1737, during the French Domination shortly after the founding of this City by Bienville. Documentary evidence has been produced by the writer in the beginning of this sketch and opinions have been quoted by him which prove beyond any doubt the origin of the Charity Hospital of Louisiana. No mention on that tablet is made of this "hospital des pauvres de la Charité" which administered during forty-two years to the indigent sick pioneers of this great State. Almonester rebuilt that Institution on the original site after its destruction by the historical hurricane which devastated the small village, the original City of New Orleans, during the Spanish regime. In recognition of his philanthropy, he was proclaimed founder by his Monarch, King Charles III of Spain. Again, this community was not indebted to the State of Pennsylvania for the means of erecting the edifice built in 1832, as the $10,000 given by that State was in answer to an appeal from the State of Louisiana in which the claim was justly made that the burden of the care of the sick citizens of other states should be shared by those states and not entirely by Louisiana. This claim was ignored by all other states with the exception of Pensylvania. Due credit for its liberality may be given in the column of names of generous benefactors. The following quotation from the Hospital Legislature Committee report of the year 1832 authenticates this statement:

"Here, your Committee cannot forbear to express their surprise, that the peculiar situation of this Institution, and the unlimited dispensation of its charities have not attracted the attention and enlisted the interest and generosity of other states. The liberality of Pennsylvania, which, we are always happy to acknowledge, furnishes a proud example which, it is devoutly to be wished, might be imitated by others. We doubt not that the generous spirit of that philanthropic State reap a rich reward from the reflection that during the last year her liberality contributed to the relief and comfort of 111 of their unfortunate fellow-citizens, whom circumstances had removed far from their homes and their friends." The justice of this claim made by the State of Louisiana One Hundred years ago is more apparent today in view of the recently adopted regulations of eastern hospitals. According to Goldwater in his Report of an Inquiry into the Administration of the Charity Hospital, particular emphasis is laid upon the duty of non-residents in the city of Boston to pay the nominal ward rates stipulated by the Boston City Hospital. It has long been the practice of this Institution to exact from outlying towns and municipalities, payment for the care of patients having a legal domicile in such cities or towns, also, in 1911, the Boston City Hospital received from various cities and towns in this way the sum of $25,165.00 and from the Commonwealth of Massachusetts, $26,334.00 and in New York City a special effort is made at Bellevue Hospital to collect maintenance costs for non-residents of the City or State, who enter the Hospital for treatment. Besides, in principle, the theory of the responsibility of sister states seems to have been recognized by Louisiana, inasmuch as an annual contribution has been collected from Mississippi for the care of citizens of that State who entered Louisiana for the purpose of seeking treatment in the Charity Hospital. The above is merely quoted to prove that the Charity only asked what rightfully should have been given to her, and that our gratitude to the State of Pennsylvania

is greatly exaggerated and historically misleading.

All honor and credit for the founding of the Charity Hospital must be given to Jean Louis; it is only just that at this belated day that the memory of this great benefactor should be perpetuated by the erection of a fitting memorial in the Hospital he founded nearly Two Hundred Years ago.

Although he was not proclaimed its founder by a friendly king, nor did he enjoy the influence of wealth and nobility, and no honors and no dignities were heaped upon his memory; none the less, it should be acknowledged that his modest legacy was the seed from which sprung the present Institution. Although there is not a cathedral for his sepulchre, not a monument erected to his glory, nor even an inscription perpetuating his memory, this humble sailor, buried in an unknown grave, could have with all humility, repeated these words of the ancient bard:

"Exegi monumentum aere perennius
Regalique situ pyramidum altius,
Quod non imber edax, non Aquilo impotens

The End.

DIGITALIS IN HEART FAILURE.

J. BIRNEY GUTHRIE, M. D.
New Orleans, La.

The term "heart failure" up to comparatively recently has been accepted by the profession and by the laity as indicating an absolute cessation of function on the part of the heart and death. To-day the term has a more relative application and is taken as implying that condition in which the heart is found unable to perform in a satisfactory manner its daily and accustomed task. The term has found its way into the literature largely through its adoption by Mackenzie. Mackenzie uses it in preference to the term "decompensation"; and observers who are careful of their use of words have rejected the term "decompensation" excepting as indicating a secondary failure after the heart has adjusted to some structural impairment or to an added task. Manifestly decompensation cannot be used with accuracy as applied to a first attack of failure.

"Heart failure" as we use the term today, implies the condition of cardiac break-down observed in various grades from that hardly noticeable to the patient, to the absolute cessation of heart function and death. The physicians are in the treatment of heart cases today, is directed toward the early recognition of the lighter grades of failure; to their correction by suitable measures tending to restore proper function by building up a "reserve"; and to the elimination, if possible, of the causative factor in the production of the failure. We are concerned chiefly with this factor in heart diagnosis today. In the cases we see in various stages of heart failure, the necessity for an accurate estimate of the grade of failure is much more important from the standpoint of treatment and prognosis than the exact knowledge of the lesions which have entered into the production of the failure. Of course, this knowledge goes far as a help in the management of a particular case; but is secondary in importance to an estimate of the heart function. We see heart failure in valvular disease where disease of the myocardium has made impossible the preservation of normal function as measured by the output of the heart in a given time. We see heart failure as a result of pathologic change in the heart muscle, and we see it as the result of disturbances of rate and rhythm though the operation of extrinsic or intrinsic causes.

It seems almost trite to call attention to the necessary resting period of the heart cycle. Yet this concept is most essential in considering the subject of proper cardiac nutrition. For a long time the greatest stress was laid on the phenomenon of slowing of the heart observed in laboratory animals when the minimal lethal dose of digitalis was approached and also observed in man under certain pathological conditions with a dosage considerably under the minimal lethal dose. This therapeutic slowing effect of the drug occurs most strikingly at times. In our series of cases 140 observed during twelve months in Medical Service No. 4 of Charity Hospital, it was of strikingly low incidence. Reduction of rate of

*Read Before Louisiana State Medical Society, April 24-26, 1923.

over 20 beats was of infrequent occurence. Notwithstanding this, the improvement was often most pronounced. It is in auricular fibrillation that improvement is most easy to prophesy and slowing, most frequent after digitalis. Again we must acknowledge a debt to Mackenzie for pointing out the mode of action of digitalis in this, the most frequent of rate and rhythm disturbances occuring in heart failure. The digitalis effect that is in operation here is chiefly the effect on the auriculo-ventricular bundle. The conduction time may be increased by the giving of the drug in relatively large dosage even to the extent of complete dissociation of auricle an dventricle and the production in the ventricle of an independent rhythm. The effect of vagus stimulation by digitalis seems of less importance in the treatment of auricular fibrillation than that in its effect on the conduction apparatus of the heart muscle. The effects of vagus stimulation by digitalis are today regarded as of secondary importance, therapeutically speaking, to the effect on the heart muscle and its conductive mechanism. Some observers even go so far as to consider the effect of digitalis in auricular fibrillation through the cardio- inhibitory apparatus as *nil*. We are quite certain that the slowing which here is of such prime advantage comes not from the cardio-inhibitory apparatus. Indeed late slowing through sinus inhibition or A-V. block is a toxic effect and constitutes a signal for stopping the drug.

A dog's heart in which fibrillation is induced by direct faradization of the auricle fibullation, can be checked by faradization of the left vagus. This degree of vagus stimulation is probably far above that which any possible dosage of digitalis that could be borne by the patient would bring about.

We are still far from being able to foretell with exactness which cases of filbrillation will be relieved by digitalis through ventricular rest and increase of recovery-time. However, the identification of auricular fibrillation by Mackenzie by means of polygraph tracings marked an epoch in the study of this most interesting drug. The later advent of the electrocardiograph has still further cleared up the subject.

Thanks to light thrown on the subject by the electrocardiograph, we are able to study the hearts of cases with diseased heart muscle with an accuracy that equals that which was not even possible in the laboratory upon an animal before its use. The clinic has through this apparatus, far outstripped the laboratory in these studies. The reactions of the diseased heart-muscle can only be obtained in the clinic. Such conditions can best be found by examining patients suffering with heart failure of varying grades. Examination of tissues post mortem has never yielded anything comparable to the richness of data obtained, without harm to the patient, by these tracings. The physiologist and the pathologist have laid the foundation; but today light on the subject of heart failure and its treatment comes chiefly from clinical data collected and studied.

We are in a position today to identify by ordinary means of investigation eye, finger and stethoscope) very many of the arrythmias which occur; but it is because of their being originally identified by means of chronologically recorded curves of the heart cycle. There still remains a field of rhythmic disorder which can only be studied by the electrocardiograph. There are cases of fibrillation which are not identified because of the lack of such records. The response of these hearts to full doses of digitalis is perhaps responsible for some of the drug's prestige outside this class of cases. Lewis has emphasized this point and he goes so far as to advance the view that there is little to be expected from the drug outside of this field. This view is not accepted by the workers in general and my own experience with digitalis is certainly not in accord with this dictum. Lewis has advanced the view that other disturbances of mechanism (auricular flutter) heretofore, etc., regarded a separate and distinct phenomena are due to the same cause, and alteration in the length of the refactory period and in the conduction time. Digitalis has been observed to convert auricular flutter into fibrillation and fibrillation finally to normal mechanism. In auricular tachycardia, digitalis fails usually to bring relief. In the cases reported where relief has come from digitalis, Lewis is inclined to be-

leive that flutter may have existed which has yielded as above decribed.

More or less blocking in the conduction bundles may be the underlying cause of the failure to function. This type of abnormal mechanism varies in a most interesting way in response to digitalis therapy. The bolck which concerns us most clinically, consists in abnormal increase in the auriculo-ventricular conduction-time. This may be partial, in which occasional impulses only are lost, or *complete* in which auricle and ventricle are contracting with an independent ryhthm.

Incomplete block accompanied by heart failure is regarded as a contra-indication to digitalis because of the likelihood of converting it into a complete block and with a further subsequent slowing. However, this conversion may be rather desirable than to be avoided. Cases have been reported where the heart rate has been actually increased as complete block occurred through freeing of the ventricle and the establishment of an independent ventricular rhythm. In complete block, digitalis can do no harm for it is without influence excepting for a beneficial one in its effect on contractility and possibly also by improving the tonus of the heart muscle.

Heart failure, we see where the mechanism is, without doubt, perfectly normal. Dilatation may not be present and the failure may be manifested by pain on exertion, edema, or by shortness of breath, orthopnea, by cyanosis. Often no demonstrable pathology is present either in the heart muscle or in the valves, to account for the clinical picture as we see it. Digitalis helps some of these cases without alteration in pulse rate, especially those with edema, when diuresis occurs. In others, on the contrary, no benefit can be obtained even from large doses pushed to the limit of tolerance. We have come to regard prompt response to digitalis as a prognostic factor of no little value. In the conditions above mentioned it is impossible to foretell with any degree of certainty which cases will respond and which cases will resist the drug. We have come to believe that such cases should be given a thorough digitalization to the point of saturation within the margin of safety under careful and continuous observation.

Always we must bear in mind that there is nothing which digitalis can do in altering the conditions in the valves. Valvular lesions are uninfluenced by the drug. If we admit a possible effect on tonusa debatable question, and upon contractility which is now quite generally admitted, we can perhaps understand an influence on the mitral valve through the papillary muscles. Formerly it was believed that the lengthened ventricular diastole produced in digitalis therapy was a contra-indication to its use in aortic regurgitation. This view is no longer held by those whose experience and opportunity for study is greatest. A theoretic, but not practical, contra-indication in aortic regurgitation, the lengthening of diastole, becomes of decided help in mitral stenosis where the filling time of the ventricle is lengthened by A-V conduction delay.

Today there is no valvular lesion in which we regard digitalis as contra-indicated. The rapid heart due to accelerator stimulation external to it or due to a toxic substance *(hyjerthyroidism)* reaching it in the blood is not slowed by digitalis and no benefit from its use in this direction can be expected.

From the clinician's standpoint the most important consideration is the question of dosage. Formerly, we gave digitalis in relatively small doses and awaited the advent of its full action sometimes for days and even weeks. Today we have much more definite data upon which to base our therapy. We know that little can be expected of digitalis until a certain dosage has been reached. The size of this dose has been determined by animal experiment and careful observation of the effects of the drug at the bedside. It is very definitely known just how much of a standard digitalis preparation will produce death in the cat. The so-called cat unit is the proportionate amount of the drug necessary per kilogram of body weight to kill the animal. Following this method practically all reliable manufacturers are putting out standardized tinctures of strength of one cal-unit to the c. c. of tincture.

Since the finding of Cohn, Frazier and Jamieson a change in the T-wave in electrocardiograph tracings occurring with the advent of moderate digitalis effect, it has been possible to identify other and later phenomena by this means. Unlike T-wave change, fortunately these other changes can be identified by the simpler and ordinary bedside observations. Various observers have watched these effects and have calculated and reported the percentage of the minimal lethal dose after which they usually occurred. As a result of their work we know that T-wave alteration occurs when 20 to 30 per cent of the minimal lethal dose (M. L. D.) has been given. Many observers believe that the advent of this phenomenon should serve as a warning that the full dosage is being approached. However, we have frequently to pass this phase in the matter of dosage and very often utilize therapeutically for maximum therapeutics effect 30 to 40 per cent of the M. L. D.

The therapeutic dose lies frequently uncomfortably near the toxic one, with a relatively small margin of safety. From the clinical standpoint the advent of nausea or vomiting following one or two days of anorexia is important. Hatcher and Weiss have shown that vomiting is a true cardiac reflex and not a central stimulation as was formerly supposed. The initial point of this reflex is in the heart itself. Acceptance of this apparently well-proven point makes doubly important the occurrence of the nausea or vomiting as a warning of the advent of toxic effect. In a heart case vomiting is a misfortune and should be avoided if possible. The preliminary anorexia may replace the nausea in giving warning.

Coupling usually a later manifestation of premature ventricular contraction and sudden slowing indicating and auriculo-ventricular block are indications for immediate stopping of the medication. Effect on the bowels (purgation) is of comparatively rare occurrence and, notwithstanding, Withering warns that it is a signal to stop the medication, we can consider it only as of secondary importance. I have records of several cases in my series which show that the occurrence of diarrhea has possibly prevented a lethal result in the patient, so large was the dosage employed. In this connection I should like to emphasize the importance of the effect of giving saline cathartics daily or 3 or 4 times a week, on digitalis absorption. Macht has shown the very great hinderance that this produces to all absorption in the intestines. This applies to food as well as to medication and furnishes an additional argument for their sparing use in the edematous case of heart failure during digitalis treatment extending through a period of days.

The calculation of the dose is of prime importance. There can be no doubt that an approximate saturation of the patient is necessary in most of the cases we are called upon to treat. The basis of this calculation at present used by all who have studied the question minutely, is body-weight and the minimal lethal dose for animals. Eggleston has done more than anyone else to give us a co-efficient expressed in terms of pharmacologic activity of various digitalis preprarations. Eggleston has endeavored to determine a quantity of digitalis which shall represent that which will give a full therapeutic effect and which will lie well within the *margin of safety*. His figure is 0.146 of a cat-unit (representing .146 c. c. c. of a standard tincture) per pound of body-weight. The dosage is given as follows: approximately 1-3 to 1-2 of the total calculated dose is administered at once and the remainder at 6 hour intervals thereafter, watching for the advent of the signals of toxic feet. Six hours is taken as the period which is required to develop the effect of a does of digitalis.

There is little doubt to-day that the therapeutic effect of digitalis in heart failure can be maintained only by keeping up the "saturation" of the patient with the drug. This we can do by konwing approximating the rate of excretion. This also has been studied. Pardee has determined by electrocardiographic study of T-wave phenomenon that the average rate of excretion is about 20 minims a day for a standard tincture in a patient of 150 pounds body-weight. It will be necessary, therefore, to maintain such a dosage in order to keep up the desired therapeutic effect, having previously administered the full thera-

peutic dose calculated by the Eggleston method.

In the preparation of this paper the writer undertook a tabulation of all cases now under treatment and all cases discharged from Medical Service No. 4 in New Orleans Charity Hospital. The cases were, all of them, under his management. There were 140 in all during the last year. Of these 84 showed heart failure and these received digitalis at some time during their hospital sojourn. It is a matter for regret that no electrocardiograph tracings were available and the polygraph was used where possible in its stead. The polygraph tracings are often disappointing on account of limitations of the instrument. The cases all occurred in colored females ranging in age between 9 and 69 years. In the colored female service, the patients come to the hospital in a much more advanced stage of cardiac failure than in the colored male service, and the high death rate per cent may be in part thereby accounted for. The age, weight, the condition of patient admitted and weighing were recorded and tabulated; diagnosis; dates of admission and discharge; number of days' duration of digitalis treatment; total digitalis given and the daily average calculated. Dr. J. T. Halsey very kindly undertook to determine the potency in cat-units of the tincture of digitalis in use in the Charity Hospital and found that it represented .70 of a cat-unit per c. c. In the table studied it was desirable to express the dosage in the terms of a standard tincture, and the corrected totals and averages are so expressed.

Working without the guide of electrocardiograph tracings it is necessary to watch most carefully for clinical evidence of toxic effect so as to keep the dosage well within the *margin of safety*. Of chief importance were the advent of anorexia, nausea or vomiting, slowing of the heart to the neighborhood of 50, the occurrence of premature ventricular contractions, heart block, or well marked diuresis. The importance of measuring the daily urinary output is of very great value in watching a case under treatment. It is in hospital practice quite difficult to obtain. The patient is most unaccustomed to the idea of treating the urine as something of value to be preserved, perhaps at considerable inconvenience. Unless there is an adequate nursing personnel this is often not done. Our records have suffered in many instances from this omission.

Limitations in our ability to watch carefully our cases call for added conservatism in the matter of dosage. The more closely we can watch for signs of toxic manifestations, the more daring may we become with this powerful drug. All of our digitalis has been given by mouth in our heart series and no strophanthin, intravenous or otherwise has been used. e have in a numebr of cases, greatly exceeded the dosage laid down by Eggleston and apparently with advantage to the patient. In studying these cases we are impressed with the desirability of getting in more or less promptly (usually during the first 24 hours of admission) a considerable portion of the calculated total amount. Patients thus treated are frequently comfortable on the second night and need less morphine.

In considering the advisability of doses exceeding the calculated amount we have in mind the very great variability of absorption found in different tinctures of digitalis all of which may possess the same biologic potency when given intravenously to a laboratory animal. This variability has been examined most carefully by Hatcher and we find a factor of absorption variability which is uncomfortably large. This factor is not so great as that which prevents us using strophanthin, but enough surely to make us eager for some more uniform preparation. It may be that the extraction of the chloroform-soluble constituents of the drug may be demanded as the basis of our standard tincture of the future; for this has been found many times more uniform of absorption by the intestinal tract.

Our series shows that out of 84 patients with heart failure taking digitalis 29 died, 34 per cent.

The average total quantity taken daily was equivalent to 49 c. c. of standard tincture. The duration of treatment counted in number of days between first dose and discontinuance was 18.

Series Summary.

Average days	18.7
Average daily dose	2.7
Average total dose	49.1cc
Maximum age	69
Minimum age	9
Largest total dose, equivalent in c. c. Standard	175.
Smallest total dose	5.2
Recovered	55
Died	29
Mortality in series	34.5%

1206 Maison Blanche Building

DISCUSSION.

Dr. Randolph Lyons (New Orleans): I think that Doctor Guthrie has brought out some very important points in the use of digitalis in heart conditions. He has shown, first of all, that it is very hard to say in every individual case whether or not digitalis will be of any benefit. You know in certain types of cardiac conditions it is generally very helpful and most especially in fibrillation. Digitalis is also of great prognostic value, when it is properly given. The difficulty comes in the practice of most of us, that we do not know enough about the digitalis we are using. There are many preparations put out by drug firms, most of which are good, but it is not always possible to know whether they are up to standard. We have found in the Charity Hospital that a good deal of the digitalis is somewhat under par and hence there is no use talking about the exact dosage required. You must push it until you get the effects you are trying to obtain. You may use the single dose method, which in most instances is not necessary; or else give fairly large doses evenly distributed, e. g., a dram every four hours. In those cases the patient must be watched carefully and the drug cut down when we get the digitalis effect.

In the past I think we have been afraid of giving too much digitalis, but if we bear in mind what the early symptoms of intoxication are, we may avoid all such dangers.

THE DETECTION OF PULSUS ALTERNANS BY THE AUSCULTATORY BLOOD PRESSURE METHOD, WITH AN ANALYSIS OF 14 CASES.*

By RANDOLPH LYONS, M. D
New Orleans

In November, 1920, I[1] reported five cases of pulsus alternans before the Southern Medical Association in Hot Springs. Since this time it has been my good fortune to observe eight new cases of this interesting cardiac arrythmia and to add another case from my records which occurred in 1918. Owing to limitation of time it will not be possible for me to take up in detail the new cases; this will be done at a later date. It will be necessary, for the present, to limit this report to a brief summary of the 14 cases observed.

Pulsus Alternans and Its Frequency.

Alternation of the pulse may be defined as a condition in which strong and weak beats alternate, but in which the cardiac rhythm is normal. Alternation may be constant, transient, intermittent or found only after premature beats. It is a sign of serious impairment of the muscular organisms of the heart, which has lost the capacity to respond with maximum contraction to every stimulus;[2] the contracting capacity is diminished. Depression of contractility is then the most evident impairment of the function in alternating pulse, although there may be other elements entering into its production. This arrythmia is classed by some cardiologists as second in frequency of the cardiac arrythmias, yet among clinicians and practitioners it is astonishingly infrequent. Why should such a state of affairs exist? Presumably because (1) cardiologists take graphic tracings of all cardio-vascular-renal cases. (2) Because practitioners still believe pulsus alternans to be a rare condition and do not appear to appreciate the fact that it can be detected while taking the blood pressure by the auscultatory method (preferably). (3) Because the pulse is often regular and within normal speed limits, hence no suspicions are aroused as to its presence. (4) Because of careless and hurried blood pressure readings. (5) Because of a faulty blood pressure instrument in which through leakage, the pressure cannot be very gradually and slowly released. It seems hardly necessary to add any further reasons, but if the physician will keep in mind the possibility of pulsus alternans in all cases of hypertension, arteriosclerosis, myocarditis and nephritis, when taking the blood pressure, this condition would rarely be overlooked.

Blood Pressure Method.

The auscultatory blood pressure method is by far the most delicate method of detecting alternation of the pulse. Either the air or mercury sphygmomanometer may be employed,

*Read Before the Louisiana State Medical Society, April 24-26, 1923.

although the oscillations of the needle in the air-manometer may aid in focusing attention on the presence of an alternation. It may be of interest to state here, that the recognition of pulsus alternans in the 14 cases that are reported, was made while taking the blood pressure. In some of the more uncertain cases, or as a control, tracings were made; furthermore, it was found in some instances that graphic records failed to reveal the alternating pulse even when Hawthorne's[3] method was used to reinforce it, although the blood pressure method detected it quite easily and later, tracings demonstrated its presence beyond any doubt. It is noteworthy that the electrocardiograph is practically useless for detrmining alternation of the pulse; not infrequently the sphygmograph fails us in early cases, but the syhygmomanometer is our mainstay and it is fortunately an instrument that all practicing physicians possess.

The technic of the blood pressure method for detecting alternation of the pulse has been admirably described by MacKenzie[4] as follows: "The armlet is distended until the artery is obliterated. On listening with the stethoscope at the bend of the elbow, the returning blood wave in artery under the stethoscope shows its presence by a sound. When pulsus alternans is present this sound is only half the rate of the heart at first, when pressure falls another 5 to 10 mm. Hg., the weaker beat comes through, and one can detect then a sound accompanying each beat of the heart. At first the beats will be unequal in volume, but as the pressure falls lower they become equal." It may be of interest to record here, that in 5 of the 14 cases, the sounds did not become equal in intensity in many instances, thus permitting a separate determination of the diastolic pressure of weak and strong beats. This observation was reported in a previous paper on two of the cases.

Chart I illustrates what I have described. It shows not only alternation of systolic pressures of weak and strong beats, but also what might be termed the "the alternating diastolic pressure" of the weak and strong beats. It should be noted that the diastolic pressure of the strong beat is always lower (in such instances) than that of the weaker beat, giving it a greater pulse pressure. This is, of course, to be expected as a greater volume of blood is expelled with each stronger contraction of the ventricle. In my earlier observations it appeared that the diastolic pressures of each alternate beat could only be obtained where the difference in systolic pressure of strong and weak beats exceeded 20 mm. of Hg. This conclusion was found to be erroneous for in Case 12, 7 and 10, there were only differences in systolic pressure of strong and weak beats of 5, 6 and 10 mm. of Hg. respectively. It is quite possible the sounds seldom become quite equal in volume only our ears are not sufficiently keen to detect any difference in the diatolic pressures of strong and weak beats, hence they apparently merge and one figure represents the diastolic level of both beats.

The diagnosis of pulsus alternans by the blood pressure method is usually not difficult, but must be differentiated from pseudo-alternation or the occurrence of regular late extra systoles (pulsus bigeminus). This source of error will be reduced to a minimum if we bear in mind (1) that in pulsus alternans, in listening over the bend of the elbow at the time when all the beats are heard, the sounds are perfectly regular, whereas, according to Mackenzie, in the case of pulsus bigeminus there is always a delay after the weaker beat. (2) In pulsus alternans, on auscultating at the apex of the heart, it is rare to note any difference in intensity of the strong and weaker beats, while in the cases of regular extra systoles, the premature beats are generally less intense. Here creeps in an interesting problem for the physiologist. We have been taught that two main factors enter into the production of the first sound of the heart; namely, the closure of the auriculo-ventricular valves and the muscle sound. From observations on cases of pulsus alternans it would appear that the muscle sound plays a very small part, clinically speaking, for how can we explain the fact that the sounds at the apex remain equal in intensity when the ventricles are contracting strongly with one beat and weakly with the next. There is still another condition which, according to White and

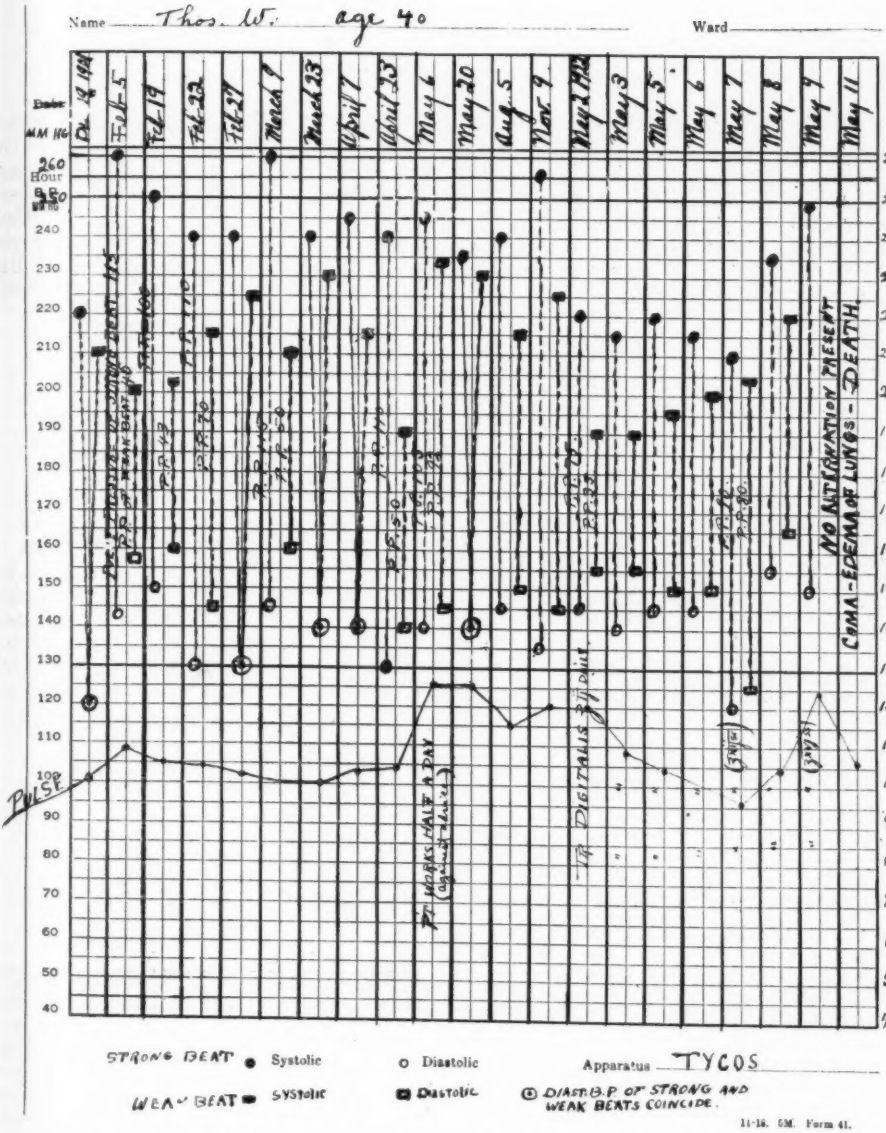

Chart 1.—(Case 2.) Graphically illustrates the alternation of systolic pressures of strong and weak beats. The circle represents the strong beats and the rectangles the weaker beats. The circle, with enclosed dot, represents the diastolic pressure where both strong and weak beats coincide. It will be noted that on many dates the diastolic pressures of strong and weak beats did not coincide and could be obtained separately. Thus on February 5th the strong beat had a systolic pressure of 260 with a diastolic pressure of 145 whereas the weak beat had a systolic pressure of 200 and a diastolic pressure of 145. Thus the pulse pressure of the strong beat was 15 and the weak beat 45. This was the highest degree of alternation noted among the 14 cases observed. The influence of digitalis can be observed during the last nine days of the patient's life—the alternation was diminished and the pulse slowed.

Figure 1.—Case 2. Mr. T. W., 43 years. February 6, 1921. Marked alternation of the pulse.

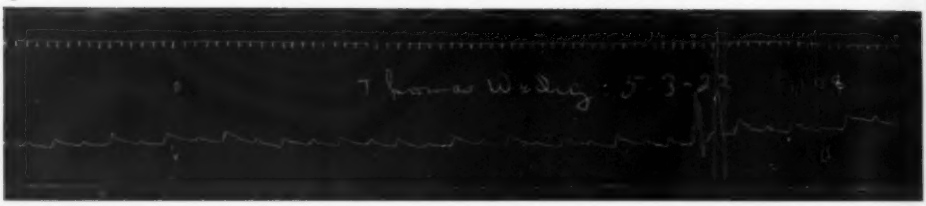

Figure 2.—Case 2. Taken on May 3, 1922, shows alternation less marked. Pulse 108. B. P. Strong beats 215/140, weak beats 204/145. Patient had had Tincture digitalis 3 drachms.

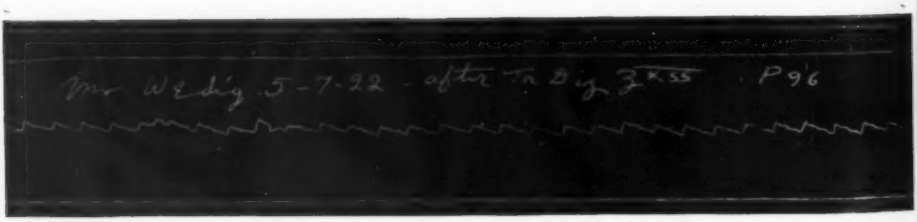

Figure 3.—Case 2. Shows alternation difficult to make cut. Pulse 96. Alternation easily discernible by blood pressure method. B. P. Strong beat 210/120, weak beat 204/125. Patient had had 10.5 drachms Tincture digitalis. Tracing made May 7, 1922. Patient died on May 11, 1922

TABLE I

CASE NO	SEX. OCCUPATION	AGE.	DATE	DURATION OF ILLNESS OF	TYPE OF ALTERNANS	DURATION OF ALTERNANS	PULSE RATE.	BLOOD PRESSURE	HEART	ARTERIES	KIDNEYS	DIED.	STATIONARY	IMPROVED	REMARKS
1	♂ G.B.M.	Baker 46	N. Rll 24 1918	1 MONTH	TRANSIENT — OVER WORK	1 DAY (?)	80	S. 120	SIZE NORMAL ANC. VAL PAINS	SCLEROTIC	NORMAL			X	PHYSICALLY WELL IN SANATORIUM. SCMILEISCHEMIA
2	♂ T.W.	SUPT. 43	NOV. 24 1920	1 YEAR +	PERMANENT	16 MONTHS + 14 DAYS	96	220/120	EVIDENCE AORTA DILATED	SCLEROTIC	CHRONIC NEPHRITIS 75% 50%	X 5-14-21		DIED DAYS AFTER ONSET OF P.A.	6 MTHS + 14
3	♀ MISS G.P.	TEACHER 62	APRIL 2 1921	8 YEARS	TRANS. TOXIC GRIP	FEW DAYS	120 FEW EXTRA SYSTOLES	190/100	MOD. LARGE	SCLER	CHRONIC BRIGHTS UREMIA	X 2-6-23		HAD UREMIC CONVULSION 3 MTHS PRIOR TO DEATH.	
4	♂ J.C.K.	MERCHANT 75	FEB 4 1921	15 YEARS	TRANS. UREMIC POISON	2 DAYS	100	220/110	MUCH DILATED HEART	MARKED SCLEROSIS	UREMIA	X 6-6-21		DIED 4 MTHS + 2 DAYS AFTER ONSET OF P.A.	
5	♀ MRS. J.M.	H-W. 52	APRIL 11 1921	25 YEARS	TRANS. UREMIC	1 DAY.	84	220/120	MUCH ENLARGED TO LEFT AORTA DILATED	SCLER.	UREMIA	X 5-8-21	DIED AFTER	D. 9 DAYS P.A.	ON ADMISSION BL. PR. 310/170 HEMATURIA
6	♂ G.P.L.	MERCHANT 58	MAY 24 1920	2 YEARS	TRANS.	1 DAY (?)	94	215/120	MOD. ENLARGED TO LEFT	MARKED SCLER	NORMAL	X 7-23-22		DIED 14 MTHS + 12 DAYS AFTER ONSET OF P.A.	
7	♂ A.R.	MERCHANT 49	NOV 25 1921	2 MONTHS (?)	PERMANENT OCCASIONAL SYSTOLE	17 MONTHS	100 FEW EXTRA SYSTOLES	150/110	DILATED AORTA DILATED	SCLER.	CHRONIC BRIGHTS EST 45% WR 31% UREA 22		X		
8	♂ A.W.S.	MILL OWNER 59	MAY 5 1921	1½ YEARS	TRANS.	1 DAY (?)	100	155/100	MOD DILATED AORTA DILATED	SCLER	NORMAL	X 2-22-22		DIED 5 MTHS + 17 DAYS AFTER P.A.	
9	♀ MRS. C.E.K.	H-W 67	DEC. 5 1921	1 YEAR	TRANS. OVER EXERTION	2 DAYS.	84	275/105 (AFTER EXERCISE)	MOD ENLARGED AORTA DILATED	SCLER.	NORMAL 2 STEC.		X		LOUD SYSTOLIC BLOW OVER AORTA ALTERNATES IN INTENSITY
10	♀ MRS. W.M.	H-W 23	OCT. 11 1922	2 WEEKS	PERMANENT (?)	22 DAYS	102 FEW EXTRA SYSTOLES	125/100	MUCH DILATED AORTA SL. ENLARGED	NORMAL	NORMAL LATER PASSIVE CONGESTION	X 2-11-23		DIED 1 MTH + 27 DAYS AFTER P.A.	
11	♂ E.L.A.	ALMOST 52	DEC. 11 1922	2 YEARS	PERMANENT (?)	84 DAYS	84 FEW EXTRA SYSTOLES	175/120	MUCH ENLARGED AORTA DILATED	SCLER	CHRONIC NEPHRITIS			X	
12	♀ MRS. J.W.L.	H-W 79	JUNE 29 1922	2 YEARS	TRANS. (?)	14 DAYS(?)	90	160/90	MOD. ENLARGED AORTA MOD. DILATED	SCLER	PRACTICALLY NEGATIVE		X		ANGINA PECTORIS
13	♀ MISS. L.F.	H-W. 68	JAN 9 1922	2 YEARS	PERMANENT EXTRA-SYSTOLE	11 DAYS	80 FEW EXTRA SYSTOLES	160/92	MARKED ENLARGED AORTA DILATED	MARKED SCLER.	CHRONIC NEPHRITIS	X 1-31-22		DIED 11 DAYS AFTER P.A.	
14	♀ MISS P.F.	27	DEC. 31 1922	2½ MONTHS	TRANS. UREMIC	17 DAYS	104	196/120	SLIGHTLY ENLARGED TO LEFT ENDOCARDITIS.	SLIGHT SCLER	CHRONIC NEPHRITIS		X		ENDOCARDITIS.

ANALYSIS OF 14 CASES OF PULSUS ALTERNANS

Figure 4.—Case 7. Mr. A. R., 49 years. Shows moderate alteration best observer after extra systoles. B. P. Strong beat 170/120, weak beat 165/120.

Figure 5.—Case 13. Miss L. F., 68 years. Tracing shows slight alteration only after extra systoles. Pulse 88. B. P. Strong beat 176/88, weak beat 168/88. Patient died nine days later.

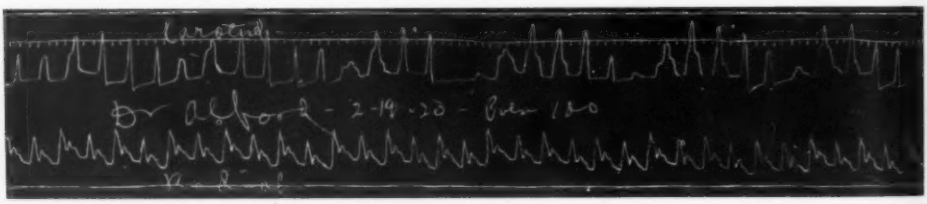

Figure 6.—Case 11. Mrs. E. L. A., 52 years. Alteration can be detected by measuring radial curves. Rate 100. B. P. strong beat 175/140, weak beat 165/140.

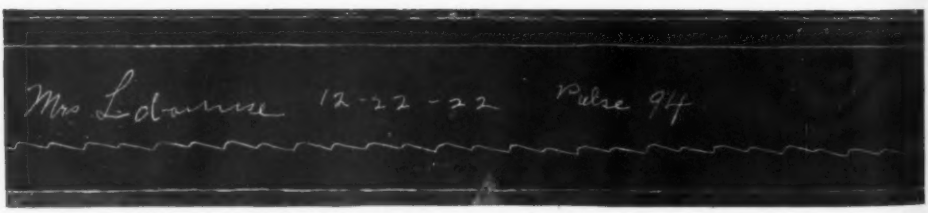

Figure 7.—Case 12. Mrs. J. W. L., 80 years. Alternation easily detected by blood pressure method. Can de detected in tracing only after careful measuring of alternate beats. Pulse 94. B. P. Strong beats 155/80, weak beats 145/90.

Lunt,[5] may produce a pulse which seems to be constantly alternating; this is a rapid respiratory rate which is one-half, or almost one-half, of the pulse rate. This pseudo-alternation is readily recognized by having the patient hold the breath for a few seconds.

Summary of 14 Cases.

Table I. Is an analysis of the more important features of the 14 patients. Cases II to VI have already been reported. In glancing over the table we note that the sexes are evenly distributed; furthermore, we find that it is a condition seldom observed under 40 years. Twelve of the fourteen cases occurred after 40 years of age (85.7%). The majority of patients (71%) fell between the ages of 50 and 80 years.

Types of Pulsus Alternans.

Permanent alternation was found in 5 cases (35.7%); transient alternation in 9 cases (64%). In two of the permanent types the alternation was noted chiefly after extra systoles (Cases 7, 11).

Pulse and Blood Pressure.

The pulse rate varied in the 14 cases from 80 to 120, giving us an average for the series of 94.1 beats per minute. In 9 of the cases the pulse was regular, which is one of the reasons that alternation is so frequently overlooked. In the remaining five cases there was some irregularity present in the form of occasional extra systoles. Hypertension is almost the rule. 86% of the patients had high blood pressure. You will note that the only two exceptions were cases 1 and 10. Case 1 might be said to have had a hypotension as he was 68 years of age with a systolic pressure of 120. He was an old arteriosclerotic with myocardial weakness, no apparent cardiac enlargement, feeble apex sounds and angina pectoris. Overwork and worry were the chief factors in the production of his alternation and anginal pains. A complete rest and giving up of business has resulted in his remaining physically well up to the present time (just 5 years.) The second exception to the rule was Case 10, a young woman of 22 years, with a systolic pressure of 125. She had enormous dilatation of a flabby heart muscle. The alternation appeared during her second attack of decompensation and she died These two cases illustrate the small heart with fibrosis and the enormously dilated flabby heart muscle both giving rise to alternation of the pulse with low or normal blood pressure. The remaining twelve cases showed hypertension with systolic pressures ranging from 150 to 310 mm. Hg.

Heart and Blood Vessels.

The heart was moderately to markedly enlarged in all but one case (Case 1). Case 1, however, only showed a very slight enlargement of the left heart. Various degrees of aortic dilatation were noted in 9 cases or 64%. Arteriosclerosis was present in varying degrees in all the series except Case 10 (92.8%).

Kidneys.

The kidneys were involved in 9 out of 14 cases (64%). Three of the cases had uremia. Case 4, a man of 75 years, was uremic when seen, but under rest in bed, digitalis and diet, the alternation and uremic symptoms rapidly subsided. At the end of ten days he was able to travel home and died four months later.

Mortality.

Of the 14 patients observed 8, or 57%, are dead. Case 12 is not expected to live more than a few weeks. Of the 8 fatal cases, 3 had permanent alternation and 5 transient alternation. The duration of life after the detection of alternation varied in the 8 fatal cases from 22 days to a little over two years.

Prognosis.

When pulsus alternans is found there is reason to believe, according to Lewis[5] "either that the heart muscle has been damaged, or that a sound, or relatively sound muscle is meeting an extraordinary demand for work. It is seen only when the muscle is laboring and in difficulty." The outlook in the permanent type of alternation, other conditions being equal, is necessarily more grave than in the transient types, because this signifies that the heart muscle has been so seriously impaired that it has permanently lost the capacity to respond with maximum contraction to every stimulus. The prognosis in the

transient types depends upon the degree of associated pathological conditions. Case 3 developed an alternation during the course of an influenza which subsided after convalescence. Apparently the addition of the influenza poisons to an already overburdened heart were sufficient to depress the function of contractility. The patient died over a year later of uremia. Over-exertion (climbing stairs) produced a marked pulsus alternans in Case 9, which lasted for two days. This patient had a dilated heart and aorta with marked arteriosclerosis. She is still living one year and a half after the onset of the alternation. The best outlook is found in alternation produced by paroxysmal tacchycardia or extraordinary physical effort where the heart muscle is apparently healthy. I have had no experience with this type.

Treatment.

When alternation of the pulse is found absolute rest is the first essential in treatment. All our measures are directed towards lightening the load of an overburdened heart muscle. Where the heart rate is accelerated, digitalis is of great benefit and under its influence, even in the permanent types, the alternation may be greatly reduced. As many of the cases have renal involvement attention must be given to the kidneys. A diminution in the salt and nitrogen in the diet will aid in reducing this toxic factor. The removal of infections where possible may assist in lessening the cardiac strain. Hypertension is usually present in these cases, but it is no contra-indication to the use of digitalis even where the pulse is relatively slow. In selected cases where the pressure is very high, venesection has produced some temporary improvement.

Conclusions.

1. Fourteen cases of alternation of the pulse are reported. Five of the cases showed permanent alternation and nine transient alternation.
2. All the cases were detected by the auscultatory blood pressure method.
3. The auscultatory blood pressure method was found to be the most delicate procedure for recognizing alternation of the pulse. Where the alternation was slight it could be detected by this method where graphic records failed to show it at first.
4. By the auscultatory blood pressure method it is frequently possible to detect not only the systolic pressure of each alternate strong and weak beat, but also a separate diastolic pressure for each alternate strong and weak beat. In such cases the diastolic pressure of the strong beat is always lower than that of the weaker. The pulse pressure of the strong beat is always greater than that of the weaker beat.
5. All the cases reported, except one, showed varying degrees of cardiac enlargement. Arteriosclerosis was present in 13 out of 14 cases. All had hypertension except two cases. Nine of the 14 cases showed dilatation of the aorta and an equal number had associated renal disease. Two cases had angina pectoris.
6. The prognosis of the permanent type of alternation of the pulse is much graver than the transient type, other conditions being equal. In the transient type the outlook depends upon the severity of the associated pathological conditions and the possibility of removing exciting causes as physical strain, infections, toxemias.
7. Treatment consists essentially in lightening the burden of an overworked organ, prolonged and absolute rest in bed, reduction of salt and nitrogen in diet, digitalis, and the removal of infections, toxemias, where possible.

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DISCUSSION.

Dr. J. Birney Guthrie (New Orleans): Doctor Lyons has made a valuable contribution which is in line with what we teachers are trying to do, that is, to put a method of observation within the reach of the men who do not have all the apparatus for making polygraphic or electrocardiograph tracings. He has very nicely illustrated the difference

between pulsus alternane and the coupled beats which we call the bigeminal pulse. Pulsus alternans is considered a very grave prognostic sign if it is not induced from poisoning.

Digitalis does bring about the coupling which is so familiar and which represents about 75 per cent of the minimal lethal dose, and it is the one thing we should watch in the matter of digitalis administration. I do not feel we should go farther in pushing digitalis than the occurrence of this coupling. I am not speaking of mistaken diagnosis, but the true condition of pulsus alternans. The explanation of the cause of this phenomenon is somewhat vague. It is supposed to be a variation in the coronary circulation induced by digitalis. Doctor Lyons has not attempted any explanaton of why this pulsus alternans exists, but we should recognize it, and recognize it as one of the grave disturbances of the mechanism of the heart which carries with it a bad prognosis.

Dr. Randolph Lyons (closing): You will notice in the charts I showed you that there is very little acceleration of the pulse. As a matter of fact, in my experience with alternation of the pulse, if you get a rate above 130 you cannot make it out.

I think in these cases the essential thing is rest. You would be surprised to see people walk into the office—I have had two or three—with alternating pulses, not thinking they were very ill. They have shortness of breath on exertion and perhaps some slight oedema, but their doctor did not tell them they were very sick because the pulse was regular and around 90. They have hypertension and some renal involvement as a rule. Putting them to bed and giving the heart a rest accomplishes an enormous amount of good. Digitalis does them good, especially if the pulse is a little accelerated. Digitalis will diminish the alternation in the permanent types and in the transient types it may eliminate it entirely. Cases with renal involvement have to be put on a low salt and low protein diet. In the transient types we should get rid of any other toxic factor, such as infection. I have had the experience of one case of pulsus alternans after influenza. As soon as she recovered from the influenza the alternation disappeared. In another case the alternation appeared after climbing stairs and subsided after two days rest in bed.

The prognosis is bad in the permanent types because there you have a condition of such serious muscle impairment that the ventricle has lost the power of reacting equally to each stimulus and nothing will get it back. They rarely live more than two years. In the transient types the outlook is better. If you can get them rid of the alternation and treat them properly they may live for many years. I have one case living five years after the alternation was found. He was an old man about 66 years of age, and the alternaton was brought about chiefly by overwork and worry. He also had angina pectoris. Taking him away from his work helped him and he is still alive after five years.

New Orleans Medical and Surgical Journal

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A NEW DEPARTURE.

It has been the policy in the past with editors of this Journal to personally attend to the correction of all proof material contributed to its pages. This method has proven unsatisfactory. Our foremost contemporary medical journals have discontinued this practice. The advantages derived from the plan of having an author correct his own manuscript proof are too many to enumerate. Co-operation on the part of contributors obviously become imperative. We know we can do it. Efficiency will characterize our efforts only if our professional confreres will demonstrate the "team-work" necessary in making this new departure a success.

NOURISH YOUR TYPHOIDS.

When many of the present "younger men" of the profession were serving hospital interneships, the method of feeding (?) typhoid fever cases wth liquids, only, was still in vogue. Something over a decade has passed since a revolt against this system took place and then —as often happens in medicine—some went too far to the other extreme and fed their patients almost, ad libitum; of course, the reaction had to come from this, also, and, as a result, many doctors have gone back to the old menu; we oft-times hearing, now, something like "I believe that liquid diet is best, after all."

We feel that, to write, editorially, on this subject, would not be fair, without referring to the excellent paper, read before out state society, at Alexandria, by Dr. Geo. S. Bel. This article, published in the April issue of our JOURNAL, is what might be termed "the last word on treatment of typhoid", anyone treating a case of this disease would do well to refresh his memory by re-reading this excellent address.

The points which we would emphasize, however, are:

1st. Don't restrict your patients to liquids, but don't give them everything to eat; 2nd. In an uncomplicated case the caloric value of the food should be rather high—say from 2,500 to 3,000 calories daily; 3rd. Remember that broths are filling, have little food value and are excellent culture media; 4th. If sweet milk is utilized, it should usually be in combination with other foods as milk, alone, causes many annoying and dangerous intestinal symptoms and the large majority of patients will not tolerate it in any appreciable amount.

The main object of this editorial, however, is to urge the medical men to be progressive, but cautious, in the dietary of the typhoid fever cases; do not starve them with liquids only; gruels, gelatines, custards, eggs, crackers, toast and potatoes have their place; "temper zealousness with common sense"; and finally, keep Dr. Bel's article, close at hand.

REPORTING VENEREAL AND OTHER DISEASES.

The Director of the Bureau of Venereal Diseases for New York State has just compiled a tabulation showing the

ports for the entire country as far as this was possible.

However much the figures may be deceptive in giving the exact number of cases, it is undoubtedly of value in pointing out where the deficiency lies.

The statistics which are those of 1922, about forty States replied to the questionnaire. It is shown that 14,492 practitioners reported a total of 303,914 cases of venereal disease. This is made up of 154,054 cases of syphilis, 147,551 of gonnorrhea and 2,309 cases of chancroid ,or an average of about 21 cases per physician.

Of all the doctors estimated to be practising in the States replying to Lawrence on average of 22.1 per cent reported one or more venereal cases in 1922. The lowest percentage viz. 4 per cent reporting is that of Deleware, the highest ,57 per cent from Minnesota. Louisiana records 197 or 11 per cent of physicians reporting one or more cases in 1922.

Another point of some interest is that the syphilis outnumber the gonorrhea cases by more than six thousand five hundred. It is not stated by Lawrence whether this figure means a reversal of the position of syphilis and gonnorrhea as compared with previous years. As a matter of fact the statistics of Louisiana for the past three years indicate this to have taken place. For instance in 1920 the gonorrhea in proportion to the syphilis cases were 4,436 to 2,856 according to report card data. In 1921 they were equal i. e. there were 4,184 gonorrhea and 4,178 syphilis reported. In 1922 the order is reversed with 4,040 syphilis to 3,194 gonorrhea cases .

It is difficult to account for this transition except on the ground that a better knowledge of the gravity of a syphilitic infection is gradually permeating the masses, and it is believed that this information is disseminated chiefly by the free venereal clinics. The comparative ease with which the treatment can be taken and absence of fee is an inducement to the poorest classes who would otherwise hesitate.

Our statistics are incomplete. A number of parishes with eight or twelve thousand inhabitants in some years have failed to return more than from two to four cases, and one with over eleven thousand suffered—according to reports—from not one single case of venereal disease in 1922.

The venereal rate for the entire State of Louisiana varied between 458 per 100,000 in 1920 to 418 in 1921, with a rise to 504 in 1922.

While it must be conceded that venereal reporting is very defective, the relative rate variations can be regarded as correct. This would indicate a decline in the venereal diseases, an assumption which has received partial corroboration by a similar decline in one other State. According to Dr. W. F. Cogswell of Montana there is no other explanation for the data which he has received .

The difficulty in obtaining reports on the prevalence of other communicable infections is only exceeded by that of obtaining an accurate report of the venereal diseases. In both cases it must be charitably assumed that the average practitioner has no appreciation of the value of statistics. He cannot or will not understand that they represent an index to the health conditions of a community or locality and which serves a two-fold purpose. In the first place they are an important guide to the health officer whose duty it is to supervise the health of the public. In the second instance they are read and followed carefully by commercial interests upon which the prosperity of the people is dependent. It is quite probable that if doctors actually knew how valuable their reports were, they would not consider the filling in of report cards a mere waste of valuable time and energy as often appears to be the case.

NEWS AND COMMENT

The semi-annual meeting of the Fourth District Medical Society will be held in Shreveport on the 16th of October, 1923. A large attendance is expected, as it is the intention of those in charge to thoroughly advertise this meeting. Dr. W. S. Kerlin, Merchants' Building, Shreveport, is secretary and ex-officio chairman of the program committee.

The Shreveport Medical Society held its regular monthly meeting at the Charity Hospital on September 4th., Dr. J. M. Bodenheimer read a paper, in which he made a defense of the use of pituitary extracts in the second stage of labor; he deplored the swinging of the pendulum back against this preparation and insisted that, if properly and cautiously used, it is of incalculable benefit. Dr. J. E. Knighton made a talk on Medical Ethics, which was well received and provoked considerable discussion; a committee was appointed to redraft the local code, so as to cover conditions which have arisen in the last few years especially in relation to the Harrison and Volstead acts.

Several interesting case reports were made, after which the society adjourned ...l the next regular meeting of Oct. 2d.

As a result of agitation over the need of extermination of the mosquito, especially as a precaution against possibility of a recurrence of Dengue, this fall, City Health Officer Health has been supplied with many additional inspectors and now a "fight to the finish" is on against the pest, in Shreveport.

Tri-State District Medical Association. Iowa, Illinois, Wisconsin and Minnesota.

The annual assembly of this association is to be held at Des Moines, Iowa October 29 to November 1st inclusive. Members of the Louisiana State Medical Society are cordially invited to attend and take part in the program. This association is a purely post graduate organization. The entire time of the annual assembly to be taken up by scientific study.

The American Public Health Association extends to the public health profession and others interested, a cordial invitation to attend its Fifty-Second Annual Meeting, in Boston, Massachusetts, October 8-11. Headquarters will be at the Copley-Plaza Hotel.

The annual meetings of this Association are always important events in the public health world, but the meeting this year is of more than usual interest since it ends the first twelve months of the new program adopted as a result of the Association's reorganization in 1922. Two General Sessions and twenty-six meetings of the scientific sessions will be held this year. In addition, many trips of technical and general interest have been planned around historic old Boston as part of the entertainment and educational program.

Notice of Examination for Entrance into the regular Corps of the United States Public Health Service.

Examinations of candidates for entrance into the Regular Corps of the U. S. Public Health Service will be held at the following named places on the dates specified:

At Washington, D. C. October 8, 1923.

At Chicago, Ill., October 8, 1923.

At San Francisco, Calif., October 8, 1923.

Candidates must be not less than twenty-three nor more than thirty-two years of age, and they must have been graduated in medicine at some reputable medical college, and have had one year's hospital experience or two years' professional practice. They must pass satisfactorily, oral, written and clinical tests before a board of medical officers and undergo a physical examination.

ST. LUKE'S SANITARIUM.

Dr. B. F. Gallant's Sanitarium has been sold to Mrs. L. N. Soniat. Dr. Gallant is perfecting plans to erect another hospital to be known as Dr. Gallant's Neurological Hospital.

NEW CHARITY HOSPITAL.

From press reports, Mrs. L. N. Soniat, as a memorium to her husband, has purchased from Dr. B. F. Gallant, the St. Luke's Sanitarium. It is to be conducted as the Charity Hospital, and the Sisters of Mercy will be in charge.

The Mississippi Valley Association will hold its 48th Annual session at Hot Springs, Arkansas, October 9th, 10th, and 11th. A program of outstanding merit and appeal has been arranged. The individual papers carefully chosen comprise pertinent topics with the maximum instructive value.

A special attraction will be a tour of the reservation with it's wonderful natural phenomena and the session of the famous Government Clinic. Headquarters will be at the Eastman Hotel. Railroad facilities are ample to the gateways of St. Louis and Memphis.

During the meeting of the Southern Medical Association, it is hoped that the Alumni of each of the Medical Schools represented will meet together at dinner. The evening of Wednesday, November 14th, has been set apart for that purpose and dining rooms have been already engaged. The committee desires to know approximately the number of diners to be expected at each of these reunions.

The American Society for the Control of Cancer is planning a campaign which lends itself much more readily to the stimulation of the medical publication. Instead of a single National Cancer week, there will be a series of six cancer campaigns, one month being devoted to the subject in each of six regions in the United States and Canada.

The plan is to devote three weeks in each region to making ready for the campaign, the fourth to be devoted to carrying out the activities. As in the past, they expect many medical societies to conduct symposia on the subject, and it is urged that the papers delivered on such occasions be assembled and perhaps published as a unit in a "Cancer Number" of the journal during the month when the campaign is being carried out in that part of the country where that particular periodical has its widest circulation.

The regular meeting of the Lafourche Valley Medical Society was held at the Elks home in Donaldsonville, Tuesday, August 14th, with a good attendance. Besides routine business, scientific papers were read by Dr. Charles Roger of Napoleonville and Drs. L. R. DeBuys and E. Denegre Martin both of New Orleans. Dr. Maurice Gelpi of New Orleans was also present and took part in the discussions. After the business session the members of the Society were guests at a dinner at the Martins Sanitarium. Drs. D. T. and A. W. Martin acting as hosts. The next quarterly meeting of the society will be held in November at Houma, La.

The ninth annual meeting of the Medical Women's National Association was held in San Francisco, June 25 and 26, in conjunction with the American Medical Association meetings, Dr. Grace N. Kimball, president; Dr. Kate Campbell Mead, president-elect. At the open session Dr. Ray Lyman Wilbur, president-elect, A. M. A., delivered an eloquent and inspiring address on the "Power of the Minority." At the open session a five-year program was presented by the Executive Committee and Council, and was adopted.

MONTHLY BULLETIN SHREVEPORT MEDICAL SOCIETY FOR SEPTEMBER

Scientific Program.

Pituitrin in the Second Stage of Labor.
Dr J. M. Bodenheimer.

Medical Ethics.
Dr. J. E. Knighton.

Charity Hospital, July 3, 1923.

The regular monthly meeting of the Shreveport Medical Society was called to order at eight-fifteen by President Pirkle. The following twenty members were present: Bodenheimer, Cassity, Hamner, J. A. Hendrick, Herold, Johns, W. S. Kerlin, Knighton, Lloyd, Lucas, Pirkle, Prothro, Ragan, Rigby, Rutledge, Sentell, Stamper, Sandidge, Yearwood, Young.

There was no report of the secretary, treasurer, or from any committee.

Scientific Program.

Dr. J. A. Hendrick read an interesting paper on Autogenous Bone Grafts of the Skull, illustrating some of his cases with rontgenograms. Discussion by Drs. Herold, Ragan, Rutledge, Johns, Bodenheimer.

Dr. W. J. Sandidge read a paper, "Outline of Parish Health Work," in

which he told of the health work being done in the parish, how it is being done and what is hoped to be accomplished in the future. Discussion by Drs. Herold, Lloyd, Knighton, Yearwood, Bodenheimer.

There were no clinical cases.

Written communications. A letter from Paul W. Geddes, D. O., was read calling attention to Jim O'Connell's Spine Massage Parlors. Discussion by Drs. Bodenheimer, Lloyd, Knighton, Morrell. A moton was passed that the secretary be instructed to write to Dr. Geddes that the president of the Louisiana State Board of Medical Examiners is the proper person to report this matter to.

A letter was read from Dr. P. T. Talbot secretary of the Louisiana State Medical Society calling attention to the fact that the Executive Committee does not feel that Dr. L. E. Litton is practicing non-sectarian medicine. A motion was made seconded and passed that the secretary be instructed to write to Dr. Litton that if he is practicing the Abrams method of diagnosis and treatment he is not practicing non-sectarian medicine and therefore he is no teligible to membership in the Louisiana State Medical Society which of itself means his ineligibility to membership in the Shreveport Medical Society.

New Business.

A motion was made, seconded and passed that the Society hold a social meeting in August and that the arrangements be left to the Entertainment Committee, consisting of Dr. Sanderson, Blackman and I. H. Smith.

Dr. Cassity made a motion, which was seconded and passed that the social meeting in August be held on the Youree Roof.

On motion the Society adjourned.

ROBT. T. LUCAS, Secretary.

NEW MEDICAL BUILDING.

The new Medical Building opposite Touro Infirmary is completed, and will be ready for occupancy October 1st. Many physicians located in offices in the downtown section of the city will move into this building in the next few weeks.

Removals—Dr. J. D. Gladney, from El Paso, Texas, to Homer, La.

Dr. F. E. Lamothe moved from 1226 Maison Blanche Building to 402 Nola Building.

Died—Dr. William T. Patton of New Orleans, La., September 5th, 1923, at Rochester, Minn.

AUGUSTUS McSHANE, M. D., 1862-1893.

Editor and Publisher of the New Orleans Medical and Surgical Journal, July, 1891-July, 1896.

Friday, September 14, 1923, the daily press announced that after a prolonged illness, Dr. Augustus McShane, aged 62 years, had passed away to eternal rest, in the early hours of the morning. On Saturday, September 15, his mortal remains were buried in the family vault at Greenwood Cemetery. The mortuary casket was covered with beautiful floral offerings from many sorrowing friends, among whom were the leading representatives of the medical profession, the New Orleans Medical and Surgical Journal, Orleans Parish, State Medical and other organizations, social and political, of which he was on honored member. All had assembled at his home and at the grave to testify to the grief of the community and to express their deep sympathy to the bereaved family.

The funeral services were presided over by the Rev. Francis Moore assistant rector of the Trinity Episcopal Church of which Dr. McShane had been a communicant for over twenty-five years.

Dr. McShane is survived by his widow (nee Miss Harriet Butler, of New Orleans) and five children—Edward, Edith, Rudolph, Nealy and Kathryne.

PROCEEDINGS AVOYELLES PARISH MEDICAL SOCIETY.

The Avoyelles Parish Medical Society met in regular session in the Merchants and Planters' Bank Building, Bunkie, Thursday, August 9th, 1923, at 8:30 p. m. Previous to the meeting the society was tendered a sumptuous repast at the Paramount Cafe, under the

auspices of the local medical profession.

The following members answered the roll call: Drs. Beridon, de Nux, S. J. Couvillon, Ducote, Roy, Fox, Plauche, W. F. Couvillon, Chatelain, Poret, Quirk, Jeansonne, Jones, Matthews. Absentees: Drs. Barbin, Tarleton, Buck, Lafargue. Guests: Drs. Caldwell, Haas and V. E. Miller, State Director of Health Units.

Dr. E. S. Matthews, essayist, read a very interesting paper on "Burns" and recommended the Ambrine treatment as a sheet anchor in the handling of burns in its various degrees. The discussion was opened by Dr. K. A. Roy, who in addition to Dr. Matthews' treatment, recommended the prophylactic treatment of tetanus with serum. Dr. Fox suggested the use of unguentine as a medicament for burns and the application of zinc oxide adhesive plasters as a means to hasten granulation. Dr. S. J. Couvillon and Dr. Caldwell discussed the pathology and complications following burns. Dr. Beridon recommended that in addition to burns, ambrine was a splendid local treatment for herpes.

Dr. W. F. Couvillon presented very valuable notes on "Our errors in diagnosis". The subject was interesting and the discussions proved to be a veritable symposium indulged by all members present.

Dr. V. E. Miller, State Director of Parish health units and Louisiana representative of the Rockefeller Foundation fund delivered a very interesting talk along his line of work. His points were well taken, but owing to the financial depression of Avoyelles parish at this time, the matter of forming a health unit for Avoyelles was deferred.

A committee composed of Dr. G. R. Fox, S. J. Couvillon and Dr. S. De Nux were appointed to draft resolutions of respect on the death of President Warren G. Harding, whose remains at the time of this meeting, are lying in state in the rotunda of the National Capitol, and present them at the next meeting.

Owing to a double duty incumbent upon him as Councillor of the Eighth District and co-editor of the New Orleans Surgical and Medical Journal, Dr. S. J. Couvillon, who for the last nine years has been Secretary-Treasurer of the Avoyelles Parish Medical Society, tendered his resignation to take place at once. After some objection, the society reluctantly accepted the resignation and Dr. G. R. Fox of Moreauville was elected in his stead to fill the unexpired term.

As per invitation tendered by the local profession of Moreauville, the next meeting of the society will be held there. October 11th, at 7 p. m.

Dr. R. G. Ducote will present a paper on "Rheumatism, Cause and Treatment'.' Dr. L. Chatelain will open discussion.

STATISTICAL DATA FOR THE MONTH OF AUGUST 1923, OBTAINED FROM THE RECORDS OF THE CITY BOARD OF HEALTH.

Births, male, white, 328; female, white, 319; by physicians, 566; male colored, 154; female colored 134; by midwives, 369.

Total, 935.

Stillbirths: 55.

Cases	White	Colored
Diphtheria	1	0
Typhoid	0	0
Malaria	0	0
Scarlet Fever	0	0
Whooping Cough	0	4
Influenza	0	1
Measles	0	0
C. S. Meningitis	1	0
Tuberculosis	29	22
Deaths	**White**	**Colored**
Cancer	27	16
Apoplexy	26	15
Endocarditis & Myocarditis	3	6
Angina Pectoris	7	0
Other Circulatory Diseases	59	60
Bronchopneumonia	5	8
Lobar Pneumonia	3	10
Other respiratory diseases	0	2
Diarrhoea, and Enteritis	6	8
Appendicitis	4	2
Other Digestive	16	8
Acute Nephritis	3	6
Chr. Nephritis	10	10
All other Genito-Urinary Diseases	2	3
Puerperal State	6	4
Malformations	20	13
External Causes	23	20

Death rate per 1,000 per annum for the month; non-residents excluded:

White	11.72	9.86
Colored	26.62	23.01
Total	15.95	13.41

Deaths from premature births, violence, etc., are not excluded.

EMILE LOUIS,
Statistician, City Board of Health.

CHIROPRACTIC STUPIDITY.

"Chiropractic teaches that small pox is the result of poisons accumulating in the body because the organs of elimination are not functioning properly... We teach that the reason the bowels and kidneys do not work right is because the functional impulse does not reach these organ, due to the fact that a vertebra in the spine is misaligned..... This adjustment of the vertebrae is the chiropractor's work"... and so on and so forth.

The above quotations are taken from a full page advertisement of the Universal Chiropractors' Association, which appeared in the October 1923 number of the Photoplay Magazine. This advertisement is an attack on vaccination which seeks support of the art or humbug of chiropractic by citing misleading information from authorative and doubtful sources.

The first of these citations emenates from Dr. Walter Hadwen M. D., M. R., C. S., of Gloucester, England, whose doctrine purports to have been expounded before a public meeting in Los Angeles, Calif., June 16,1922.

This illustrious but erring colleague is reported to have told his audience, whom he calls his "friends", that "the whole wretched vaccination and inoculation system is based upon superstition" and further he renders public thanks to God that "we have carried a law in my country that no one need be vaccinated", and accordingly 75 per cent of the children ARE NOT vaccinated. Never in history has there been so little small pox in England. "It is practically non existant" and yet this man comes from a city in which but a few short years ago 279 unvaccinated children as against one in 8,000 vaccinated were sacrificed to public stupidity. Similar experience, though not so extensive, has been recorded from Glasgow. We do know that Dr. Hadwen speaks the truth, at least regarding popular disapproval of vaccination.

Paget says in remarking about this opposition to vaccination in England that: "The majority of Englishmen and Englishwomen regard it (vaccination) as they usually look upon the emergency doors in a theatre, well to have around but not to be used until necessity arises." And after discussing the Gloucester catastrophe, Paget furthe dolefully remarks: "We are taking th risk of disaster, and are taking it wit our eyes open...." As he sums up th situation, England with its closel packed teeming masses is gambling wit destiny. It is a gamble in which th people and especially the congeste population is likely to lose. It is taking a chance that a mild unrecognized cas of small pox may start an epidemi which would endanger great cities and spread throughout the country. We are astonished to learn that in the country of Jenner where, if in any country, the advantages of vaccination should be most thoroughly understood and appreciated by the people there is an active resistance prevalent which makes compulsory vaccination a condition impossible of execution.

Then there are facts published by the Advertisers Protective Bureau of the Kansas City Advertising Club, the secretary of which is George M. Husser 801 Graphic Arts Bldg., Kansas City, Mo.

The main disturbance in the mind of Mr. Husser centers around the facts that of 200,000 estimated vaccinations which are said to have been made in 1921, the fees charged varied from 25 cents to $5.00 and the public is believed to have parted with nigh onto $500,000. Furthermore some people suffered severely from the after effects of the vaccination, though, be it said no deaths are claimed. Worst of all this vaccination furor caused numbers to imagine they were suffering from symptoms of the dread disease "and desired medical advice, which added to the cost."

There are no comments necessary on these statements. They are simply puerile vaporings which in no way controvert accepted medical facts.

A little more startling, though by no means convincing, are the statements purporting to have been derived from the Masonic Observer of Minneapolis of December 17, 1921 and January 14, 1922 from a special mission of investigation in the Philippine Islands under the leadership of General Wood and finally a quotation from "Physical Culture" June

1922 on the small pox condition in those misguided islands.

The Masonic Observer is said to have observed that there were 60,612 cases and 43,294 deaths from small pox in the Philippines in 1919. We are told that this is the worst of three epidemics which have visited the island since 1905.

During the latter epidemic the mortality is stated as having been 65 per cent whereas in the previous ones it ranged between 16 and 50 per cent. All this since the occupation by the United States and after universal vaccination is supposed to have been introduced.

This report which furnished new ammunition for anti vaccinationists and the reply to it by Victor Heisser, one time Health Officer of the Philippines, is not entirely unknown to us. Let us see what Heisser has to say on the subject.

The fact that the deaths occured is not contested by Heisser, but that vaccination proved powerless to prevent them is strenuously denied.

It is claimed by Heisser that during the Spanish regime there were more than 40,000 deaths annually in the Philippines, but later where the vaccination was properly carried out the disease disappeared.

As an example of the beneficial results following the vaccination campaign Heisser and his co-worker, Leach, point to the reduction in the death list for the provinces surrounding Manila. Prior to vaccination 6,000 persons died every year. Afterward the rate declined to almost zero. While the deaths that formerly reached nearly 40,000 were reduced to a few hundred.

The difficulties which attend vaccination in the Philippines are great. In the first place the temperature which ranges from 90-100° F the year round soon brings about a deterioration of imported vaccine. Another difficulty and, doubtless one upon which the antis pounced with great glee, is the record of thousands of vaccinations WHICH NEVER TOOK PLACE. The vaccinators and health officials frequently reported thousands of vaccinations in excess of the population. Vaccine was not infrequently found in the waste paper baskets.

Tabulations show that the percentage of deaths among the unvaccinated was 93 per cent, while only 7 per cent of the vaccinated died of small pox.

As Heisser and Leach remark it is regrettable that such half truths should reach the United States and be utilized in an irresponsible manner in order to discourage vaccination.

The following conclusions of Heisser and Leach are worthy of quotation:

"Vaccination is the greatest safeguard against small pox.

"In countries like the Philippines tremendous catastrophies occur unless the entire population is thoroughly vaccinated against small pox.

"Millions of vaccinations have been made in the Philippines without loss of life or limb or any observable effect on health.

In the past those who have advocated the abolition of vaccination have been the cause of many deaths among the unvaccinated. In view of the frightful loss of life that may occur in small pox epidemics they are assuming a grave responsibility if they continue their campaign."

When we note the effect of compulsory vaccination on the morbidity and mortality statistics of this disease in Germany and Austria and compare this data with that emenating from other countries of the world, we are at an utter loss to grasp the mental process by which the anti-vaccinationist arrives at his conclusion.

Still more curious the fact that his vapid arguments prevail among law makers over the scientific and rational judgment of men who ought to know.

The pseudo sentiments of the chiropractor cult as set forth in the advertisement alluded to, would not be worthy of a second thought were it not for the fact that they appear in a journal which has a wide circulation among the general public and the contents is devoured by a class not overburdened with a surplus of critical sense. It is very likely to prove a real danger to those whose warped judgment does not permit them to distinguish between the true and the false.

Removal—Dr. I. E. Siess, from Alco, La., to Alexandria, La.

PUBLICATIONS RECEIVED

W. B. Saunders Company, Philadelphia and London: *Excursions into Surgical Subjects*, by John B. Deaver, M. D., Sc. D., LL. D., F. A. C. S., and Stanley P. Reimann, M. D.

C. V. Mosby, Company, St. Louis: *Chemistry for Nurses*, by Fredus N. Peters, A. M., Ph. D. Principles of Bacteriology, by Arthur A. Eisenburg, A. B., M. D. *Obstetrics for Nurses*, by Charles B. Reed, M. D.

P. Blakiston's Son & Company, Philadelphia: *Ophthalmic Surgery*, by Dr. Josef Meller, edited by Dr. William M. Sweet. *The Development of the Human Body*, by J. Playfair McMurrich, A. M., Ph. D., LL. D.

Rebman Company, New York: *A Clinical Guide to Bedside Examination*, by Dr. H. Elias, Dr. N. Jagic, Dr. A. Luger arranged and translated by Wm. A. Brams, M. D.

A. F. Pattee, Mount Vernon, New York: *Practical Dietetics-Diet in Health and Disease*, and *Teacher's Dietetic Guide*, by Alida Frances Pattee.

The Year Book Bublishers, Chicago: Practical Medicine Series, Vol. 1, 1923 *General Medicine*, by Charles L. Mix A. M., M. D.

Ophthalmic Publishing Company Chicago: *Ophthalmic Year Book*, Vol. XIX, Edited by Edward Jackson and William H. Crisp.